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# The custom profile extrusion industry in southern Ontario an economic and geographic examination of a growth-pole

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# THE CUSTOM PROFILE EXTRUSION INDUSTRY IN SOUTHERN ONTARIO: AN ECONOMIC AND GEOGRAPHIC EXAMINATION OF A GROWTH-POLE

by

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Bachelor of Arts, Wilfrid Laurier University, 1969

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## ABSTRACT

The Custom Profile Extrusion Industry, which is one segment of the total Plastics Industry, has developed within Southern Ontario during the last two decades. The behaviour of the firms which make up the Profile Industry has been scrutinized, collectively, to determine whether or not they qualified as a growth pole within the context of Perroux's theory. Through the use of a heuristic approach this industry has been studied and evaluated. The findings from the data collected from these firms has been examined to ascertain the relevancy of this industry within a growth pole concept.

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# CHAPTER 1

# INTRODUCTION

## Aim of the Study

This study is directed towards an empirical investigation of the economic and geographic characteristics which are felt to be embodied within the Custom Profile Extrusion Industry in Southern Ontario. These characteristics will be reviewed in accordance with the theory on growth poles as advanced by F. Perroux. The study will focus on the more relevant features of his theory and their pragmatic applications as revealed within this industry. The scope of the study, i.e. the range of view or activity, will include references and examples pertaining to the total plastics industry, the plastics fabricating industries, and the custom profile industry segment.

One major intent will be to demonstrate that the Custom Profile Extrusion Industry exhibits the distinguishing traits that the growth pole industry must possess in order to qualify in this regard. As such, it will impact positively within the growth centre of Metropolitan Toronto, the major study area, and, accordingly, will have the inherent capability and propensity to impact upon and influence other regions.

In this research the following general hypotheses are raised to explore the relationship between the growth pole

concept and the Custom Profile Extrusion Industry of Ontario.

1. The growth of the Plastics Industry over the past decade has been rapid and as such qualifies as a motor or propulsive, growth pole industry.

Support for this will be found through an examination of the growth rate of the total Plastics Industry as well as an evaluation of the contribution made by the Custom Profile Extrusion segment. A growth rate which surpasses the growth rate of the national economy, as a whole, is one important characteristic embodied within the theory.

2. Centripetal forces have been a deciding factor in contributing to the early settlement of the industry within Metropolitan Toronto. Such an agglomeration force is expected from a motor industry in its early period of growth.

Emphasis will be concentrated upon looking at those industries which are believed to be supportive of the Plastics Industry and who have their raison d'etre for establishing within the Metropolitan Toronto region due to their interaction with this industry. A high degree of linkages to other industries is another important characteristic of Perroux's theory.

3. Recently, centrifugal forces within the economic environment of the growth centre, Toronto, have pressured

a peripheral expansion of this industry. This is to be expected as a growth pole industry matures. The result of this force are new production centres which, through time, may qualify as new growth centres.

An evaluation of the economic and industrial milieu of the Metropolitan Toronto region will be given to substantiate this hypothesis. The role of centrifugal forces play a key role in the explanation of the theory.

4. The nature of the product life cycle impacts both upon the growth pole and the growth centre. The former may respond through increases in new innovations or it may fall into disunity. The latter may have to bear the brunt of losing industry if they move to peripheral regions.

5. The success of the Custom Profile Extrusion Industry has been achieved through innovative products. As an innovator, by the introduction of new goods into the marketplace, through the opening of new markets and through the technique used to produce its products, this industry qualifies as a growth pole industry. The results of the empirical research will show this to be true.

The emphasis placed upon the innovative nature of this industry will be qualified through an examination of the types of products that have been formulated over the past two decades. Innovations are seen as the primary underlying force to growth and ranks high in the order of

attributes afforded to a growth pole industry.

6. Generally, government aid has been available to most industries. The Custom Profile Extrusion Industry has also availed itself of such financial assistance. This has been a force that has propelled some industry members to peripheral locations. In other words, the location of a growth pole can be guided through financial government involvement in the industry.

Attention will be focused upon the role of monetary assistance to the Plastics Industry to determine the direction of such aid, through time. Perroux places a positive emphasis on the role that the State or Government plays within the economic environment.

Justification

The need to review the Custom Profile Extrusion Industry, within the context of a growth pole concept, arises from a concern expressed by and manifested in the interest of industry, society, and geographers alike.

First, while the Profile Industry segment is small in size it is dynamic in its potential for future growth. The members of this industry are extremely interested as to how and where this growth will occur. While each company is singularly responsible for implementing its own micro planning and decision-making processes, through time these plans may, directly or indirectly, influence the

macro economic and industrial scenario. Hence, effectual changes in the locational development pattern will have critical implications for all the members of this industry. For this reason an explanation of where this scenario is most likely to occur is of vital interest to this industries' members.

Second, from a societal viewpoint the behavioural pattern of industrial development is of importance for several reasons. For example, the growth potential of an industry in one region, or its possible movement to another, has many implications upon the municipal planning process. Also, there is a definite need to know where an industry, or industries, will concentrate from the point of view of suppliers to that industry and the workers for that industry. This developmental process should not be carried out on the basis of uninformed decision-making but rather through a planned process. The ultimate result will be the creation of new jobs and new business opportunities as any resultant complex arising from expansion or movement will require additional infrastructure.

Third, from an academic viewpoint there is a need to be able to isolate empirical examples of industrial activities which can be used as models for explaining other similar phenomena. Empirical evidence provides the real ground from which other hypotheses can be generated. The

interpretation of the data and the formulating of the findings will help industry and society to better understand the underlying causes of polarized development.

Lastly, an assessment of this industry segment has never before been attempted. Because of the writer's closeness to certain members of this industry certain data has been provided which normally would not have been available. The use of this micro segment should highlight and provide an insight into the directional mobility of the plastics industry.

## Scope, Study Area, and Data Source

It is the purpose of this research to demonstrate that the Custom Profile Extrusion Industry segment of the total Canadian Plastics Industry epitomizes the reality of a growth pole, using the concepts of the growth pole theory as advanced by Francois Perroux.[1] Through the use of a heuristic approach it will be shown that this industry segment conforms to the criteria necessary to designate it as a growth pole industry.

Using Southern Ontario as a focal point, with particular emphasis placed on the Metropolitan Toronto region, an analysis of the developmental processes and subsequent spatial arrangements will be used to illustrate the dynamic nature of the firms that make up this industry seg-

ment. The initial hypothesis to be examined is whether the total Plastics Industry is, in fact, representative of a growth industry. Hence, through inclusion and by association, the Custom Profile Extrusion Industry segment also qualifies as a growth industry.

For comparative purposes the year selected for study is 1980. The reason for selecting this year is primarily as a reference point in time only. Wherever possible, all data are related to the market or market conditions as they appeared in 1980. Any supportive projections, other than those deduced from the study itself, will be substantiated by experts in this field. Data will be forthcoming from a survey conducted among the members of this industry during the summer of 1982 by the writer. The results of this survey will be covered in detail in Chapter V. (Refer to Appendix G for a copy of the questionnaire). As well, data supplied by the Society of Plastics Industries, Statistics Canada, The Ontario Development Corporations, The Toronto Real Estate Board, and, The Toronto Area Industrial Development Board, will be used.

## Background to the Plastics Industry

The Plastics Industry has many 'families' of polymers associated with it, i.e. specific chemicals produced from by-products of petroleum and natural gas. This research will, however, focus on only those products manufactured

in the custom profile extrusion process using Poly Vinyl Chloride (PVC) as the main polymer. Other selections could have included polymers such as polypropylene, polystyrene or polyethylene. As well, production processes such as molding, calendering or vacuum forming applicable to all these polymers could have been considered.

The reason underlying the selection of this particular and somewhat specialized PVC process was to ensure a commonality of materials and production processes for comparative purposes. Businesses involved in the Profile Extrusion Industry segment have a basic commonality in the type of equipment that is used to process PVC into a finished product. The extrusion process requires the use of an extruder, even though there are many different types, in order to output a finished profile. In itself, this manufacturing technique differentiates this industry segment from other manufactuerers who may use similar raw materials but whose manufacturing techniques and end products are dissimilar.

PVC Market and Process

On a world scale the consumption of PVC, in 1980, was 21.1 billion pounds. Table 1-1 illustrates the dynamic growth in prior years along with the projected increases in consumption through 1983.

TABLE 1-1

WORLD PVC CONSUMPTION

BILLIONS OF POUNDS

| Country | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | Average Annual % Growth |
|---|---|---|---|---|---|---|---|
| U.S.A. | 5.4 | 5.8 | 6.1 | 6.5 | 7.0 | 7.4 | 6.5 |
| Canada | .4 | .4 | .4 | .4 | .5 | .5 | 9.0 |
| Mexico | .2 | .2 | .3 | .3 | .3 | .4 | 12.2 |
| Latin America | .8 | .9 | 1.0 | 1.1 | 1.3 | 1.4 | 11.6 |
| Western Europe | 7.8 | 8.2 | 8.6 | 9.0 | 9.4 | 9.8 | 4.8 |
| Japan | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 3.6 |
| Other Countries | 1.8 | 2.0 | 2.2 | 2.5 | 2.7 | 3.1 | 11.0 |
| Total | 18.7 | 19.9 | 21.1 | 22.5 | 23.9 | 25.4 | 6.3 |

Source: F. Hovey, B.F. Goodrich Canada Inc. Presented at CanPlast '79, May 14, 1979 at the Quebec Hilton Hotel, Quebec city, PVC The Performance Polymer.

PVC has two sources of feedstocks; one, petroleum crude is distilled to obtain naptha, which is cracked to produce ethylene and propylene; two, natural gas is treated to seperate ethane and propane, which are also cracked to obtain ethylene and propylene. The building block, ethylene, with the addition of chlorine from salts, is processed by direct chlorination and oxyhydrochlorination to produce ethylene dichloride which is cracked to obtain vinyl chloride monomer (VCM). About two thirds of North America's VCM supply is obtained from natural gas and the balance from petroleum. The final conversion from VCM to the required resin form is carried out through the process known as polymerization. Usually one of three processes is involved. These are: suspension, mass, and dispersion polymerization. The final product, PVC resin, resembles a white flour in appearance. To this resin is added whatever additives are required to result in a product which when heated then molded, extruded, calendered, or changed through any of these processes, produces a final saleable product.

As to the capacity of Canadian producers to output this resin, Table 1-2 gives their anticipated position to 1983.

Canada's PVC Market

While Canadian manufacturing has undergone a keen

TABLE 1-2

ESTIMATED CANADIAN RATED CAPACITY AND DEMAND

MILLIONS OF POUNDS

| | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|---|---|---|---|---|---|
| VCM Capacity | 200 | 200 | 500 | 900 | 900 | 900 |
| PVC Capacity | 260 | 460 | 660 | 660 | 660 | 760 |
| PVC Demand | 357 | 389 | 419 | 462 | 503 | 549 |

Source: PCV-The Performance Polymer. Presented at CanPlast '79, May 14, 1979 at the Quebec Hilton Hotel, Quebec City by F. Hovey, B.F. Goodrich Canada Inc.

scrutiny by various writers, Brewis, (1969), Britton, (1981) and Walker, (1981), their thrust has generally been towards looking at the larger industrial components and not the minor factions which have a symbiotic relationship to the larger component. When the term 'plastics' is used in its generic sense many products are instantly conjured up in the mind of the reader. As Table 1-3 illustrates the number of potential products from the PVC industry alone is very large. Of all the 'families' of plastics this is just one branch. While end products cover a wide range of items, some fair better than others in sales' volumes. As will be shown later, Chapter IV,

Table 4-4, PVC represents only 14.0 per cent of all Canadian production of plastics and 13.0 per cent of all consumption. The Custom Profile sector, which in effect is made up, in part, from both profile and sheet, (flexible and rigid), and siding, represented less than 20.0 per cent of the PVC market in 1978. However, as can be seen from Table 1-3 both Profile and Sheet, and Siding are expanding at a faster rate than all the other segments, with the exception of Pipe.

It is to this growing market segment that this research is being directed. The significance of this growth, as it relates to Perroux's theory, will be addressed in more detail in subsequent chapters.

Technological Advances

The main reason for looking at the Custom Profile Extrusion segment of the Plastics Industry is to show that although it is comprised of a small group of manufacturers, numbering about fifty, and has been in business for less than two decades, it has, within that time, quietly revolutionized many standard products manufactured from PVC. Fabricated products with which all consumers are familiar range from siding installations, window components, car body molding, and garden hose, to name but a few of the widely diversified products. These are all examples of products which have resulted from advances in

TABLE 1-3

CANADIAN MARKET SIZE AND GROWTH BY MARKET SEGMENT

MILLIONS OF POUNDS OF PVC

| Market Segment for PVC | 1978 | Market Per Cent | Average Annual Growth | 1985 | Market Per Cent |
|---|---|---|---|---|---|
| Pipe & Fittings | 108 | 30.2 | 10.8 | 221 | 33.9 |
| Profile & Sheet | | | | | |
| - Rigid 29 | | 14.8 | 76 | | |
| - Flexible 29 | | 6.5 | 45 | | |
| - Total | 58 | 16.2 | 11.1 | 121 | 18.6 |
| Siding | 24 | 6.7 | 18.1 | 77 | 11.8 |
| Wire & Cable | 42 | 11.8 | 3.9 | 55 | 8.4 |
| Flooring | 32 | 9.0 | 4.3 | 43 | 6.6 |
| Film Sheet & Coated Fabrics | 67 | 18.8 | 5.3 | 96 | 14.7 |
| Records | 16 | 4.5 | 6.5 | 25 | 3.8 |
| Bottles | 10 | 2.8 | 5.0 | 14 | 2.2 |
| Totals | 357 | 100.0 | 9.0 | 652 | 100.0 |

Source: F. Hovey, B.F. Goddrich Canada Inc. Presented at CanPlast '79, May 14, 1979 at the Quebec Hilton Hotel, Quebec City PVC The Performance Polymer.

technological know-how. Also, these are specific examples of companies' products which, in themselves, have helped to create a new industry in Canada. These micro industries together form the backbone of the PVC industry. Rather than just speaking of the industry as a collective entity these micro industries take on a new importance as the specific nature of what they produce can then lead to further investigation of their individual contribution to the whole industry. Britton, for example, in speaking about the automotive industry says, "... there is an enormous deficit on auto-parts trade."[2] However, he does not state what parts are involved, nor does he refer to any specific industry that is losing out on this marketing problem. Because the PVC industry, and in particular the Custom Profile segment, effectively produces products that find a ready market within the field of export they are a positive contributor to Canada's trade balance. Part of this success history has been the acceptance by the consumer to these innovative products, largely due to their high quality and adapatability to most environments.

The questions that need to be considered are: do they constitute a growth industry and does their location give them growth pole status? Why are these manufacturing plants located where they are? Do past attitudes dictate that future growth of these industries, individually or

collectively, will occur only in the heartland area, or are they adaptable to peripheral regions?

Even though the sample of firms evaluated in the study is somewhat small, it is felt that the results will be generally applicable to all the industries within the plastics 'family'.

Exogenous Forces Impacting upon the Custom Profile Industry

No enterprise can realistically exist in a vacuum. Every manufacturer is faced with the problems of obtaining raw materials, converting them into an acceptable finished product through the use of men and equipment, and, moving his final products to the marketplace. As well, political, social, and economic factors can affect the success or failure or any business. A measurement of some of these factors will be attempted to give some perspective as to their impacts upon these businesses, which are generally located within Southern Ontario. The objective will be to try to determine how adversely these exogenous forces could impact upon a business in a particular area and to try to determine the managitude of the same impact if this firm was located elsewhere. One example of this would be the perceived relationship of site selection versus the distance to their major supplier. Similarly, how important is distance to market and where exactly is the market for their products? What benefits are there to

any company, within this sector, from being located relatively close to other companies producing a similar product? Is it the exogenous forces that have the greatest impact upon a plant being located where it is, or do the endogenous factors carry similar weight? These are the types of questions to which, hopefully, answers will be found in order to give some depth and perspective to the findings relevant to this industry segment.

Summary

The aim of the study is to conduct an empirical investigation of the economic and geographic characteristics of the Custom Profile Extrusion Industry in accordance with the theory on growth poles as proposed by F. Perroux. To do this, six hypotheses were proposed. The intent of the research is to find evidence which will substantiate these hypotheses.

The need to look at the Custom Profile Extrusion Industry stems from three sources. These are:

1. The firms that are members of this particular PVC industry. They are aware that industry, per se, is not static but is subject to change. They have a need to know where the future locational patterns might develop.
2. The viewpoint of society. The implications upon

the structuring of new businesses that might arise if this industry segment elected to move into new regions.

3. The perspective from the academic. If this work can provide empirical evidence of polarized development then it could be used for further studies of a similar nature.

The year selected for study was 1980, simply as a reference point in time. This particular year has no special significance. The setting for this investigation will be within the concepts of the growth pole theory as advanced by F. Perroux.

Tables 1-1, 1-2 and 1-3 were provided to show the extent in size of the overall industry and to give some insight both on a world scale and from a Canadian viewpoint.

The discussion covering the technological advances of this industry segment shows that this group of PVC processors are innovative and dynamic. As such, can evidence be produced that will qualify them as a growth pole industry?

Through the use of a survey technique an investigation will be carried out to try to ascertain how both exogenous and endogenous forces impact upon these PVC processors. These results, along with other findings, will be used to qualify and quantify the disposition of

these PVC industries within Southern Ontario. It is also anticipated that the results of this study, showing the developmental pattern of this industry, among other things, might be helpful as a tool or as a means for assessing other micro industry members.

The six hypotheses that have been raised within this chapter will be dealt with in ensuing chapters to determine their validity within the growth pole concept. The growth of the Custom Profile Extrusion Industry will be seen as the result of the innovative processes displayed by this industry within the limitations of the growth pole theory. The dynamics of progression from a relatively few companies located within a small industrialized region, to an expansionary phase into peripheral areas of Ontario will be examined in light of the growth pole concept. It will be shown that this industry is presently in a dynamic, rather than static, phase as one would expect from a growth pole.

Discussion within future chapters will be directed towards articulating how and why the Custom Profile Industry is representational of a growth pole industry.

## REFERENCES FOR CHAPTER 1

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2. Britton, J.N.H. (1981), "Industrial Impacts of Foreign Enterprise: A Canadian Technological Perspective," in Professional Geographer, 33(1), pp. 36-47.

## CHAPTER II

## THEORETICAL ASSESSMENT AND EVALUATION

### Development of the Growth Pole Theory

The concept of growth poles was first proposed by Francois Perroux.[1] In attempting to understand his theory it is first necessary to look at the background contribution to the final theory as developed by A. Schumpeter.[2] Schumpeter argued that economic growth, in and by itself, did not constitute development. He said that, "... economic development is not a phenomenon to be explained economically, but that the economy, in itself without development is dragged along by the changes in the surrounding world."[3] He argued that it is, "... the producer who as a rule initiates economic change, and consumers are educated by him if necessary; they are, as it were taught to want new things."[4] Schumpter, in an effort to enlighten his readers as to the fundamental reasoning underlying the direction of his hypothesis, compiled a strategic list of five causal actions which by themselves, or in combinations with each other, could be regarded as the innovative forces behind development. These are:

1. the introduction of a new good ... or a new quality of good.
2. the introduction of a new method of production.
3. the opening of a new market.

4. the conquest of a new source of supply ..., and

5. ... the new organization of any industry, like the creation of a monopoly position or the breaking up of a monopoly position.*[5].

From Development to Theory

How did Perroux expound upon the writings, or theory, of Schumpeter and wherein lay the difference? According to J.R. Lasuen, 1969, the contribution made by Perroux was the interpreting of Schumpeter's work into a spatial setting. He states:

> "... the net contribution of Perroux to the Schumpeterian argument was that he took Schumpeter's tool-box concepts and hypotheses from its original sectoral-temporal setting and applied it to a sectoral-temporal-geographical universe."[6]

Brookfield, in 1975, made similar comments along the same lines in reviewing Schumpeter's works. He comments that there is, "... nothing spatial in any party of Schumpeter's writings..." and it was, "... the particular contribution of Francois Perroux to open up ... questions ... of a spatial order."[7]

Perroux had problems in coming to grips with the

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*Schumpeter provides an integral basis for Perroux's development of growth pole theory. At least three of the causal actions will be dealt with in detail in subsequent chapters with an explanation of their relevancy to the Custom Profile Extrusion Industry.

common and inexact notion of space.[8] Perroux states: "A banal sense of space location creates the illusion of the coincidence of political space with economic and human space."[9] His main point was that, "... the spaces which directly concern us are economic spaces. They are defined by the economic relations which exist between economic elements."[10] In light of this statement he proposes three types of economic space. These are:

1. as defined by a plan
2. as a field of forces, and,
3. as a homogeneous aggregate.[11]

The second type is relevant to his further works, inasmuch as he states:

> "As a field of forces, economic space consists of centres (or poles or foci) from which centrifugal forces emanate and to which centripetal forces are attracted. ... The firm considered as a centre releases centrifugal and centripetal forces. ... Through this process, the economic zone of influence, whether or not it is linked to the topographical one, is determined. [A firm's] economic zone of influence... defies cartography."[12]

The earlier writing, (1950A), is interesting from two points of view: one, that this was the genesis for his future work in which his idea of growth poles became more fully developed, and two, that firms in the business world, through economic activity, did create forces which were transmitted through economic space to influence other businesses or areas. This generating of forces into other

spheres determined that this was a dynamic rather than a static formulation. The evidences for this at a pragmatic level will be covered in subsequent chapters, to illustrate the connectivity of this theory with the Custom Profile Industry.

By 1955 the heart of his hypothesis had been postulated. Development became synonymous with faster than normal growth. Perroux writes:

> "Another aspect characterizing structural change in a national economy is the diffusion of the growth of an industry (or group of industries). The appearance of a new industry, the growth of an existing industry, are diffused through prices, through flows, through expectations. In the course of longer periods, the products of an industry or of a group of industries, profoundly transformed and sometimes hardly recognizable compared with their initial forms, permit new inventions giving birth to new industries. The fact, rough but solid, is this; growth does not appear everywhere at the same time; it manifests itself in points or 'poles' of growth, with variable intensities; it spreads by different channels and with variable terminal effects for the economy as a whole."[13]

Also, the impact upon the overall economy can be felt from the standpoint of any economy increasing or decreasing its output. In cases of a new industry when innovations or technological break-throughs are introduced into the economic scenario, "... the output of the industry comes as a net increase in the aggregate output of the economy... "[14] In looking at the leading industry in an economy, which Perroux calls the 'motor' industry, it

impacts upon output in two ways. One, it provides, "... the supplementary output which, ... it induces into its environment."[15] Two, it, "... creates a 'climate' favourable to growth and progress."[16] In all likelihood the outcome is that more jobs are created as other enterprises see the benefits of being in a particular business, or, as Perroux says, it "... acts as an example to others and provokes imitations, themselves creative."[17]

Perroux also expresses the importance of the 'motor' industry by saying that it will increase its output and that of. "... all entrepreneurs capable of creative expectations [who] are stimulated and pulled along."[18] In this economic setting the manufacturers will use their, "... fixed capital more fully, that is, in order to operate at lower and lower points on its cost curves."[19] He also introduces the idea that an industry does not exist by itself but helps to generate or stimulate other industry. He says,

> "Since a new industry does not generally appear alone, as new industries grow in overlapping fashion, the increase in total output is a function of: the level of additional output in the new industries themselves, taken together, and the levels of additional output induced by the new industries taken together."[20]

By giving credence to 'banal geographic space' Perroux has removed himself from an 'abstract space' point of view. He says, "In a complex industrial 'pole' which is

geographically concentrated and growing, economic activities are intensified because of proximity and human contacts."[21]

However, rather than moving from abstract to geographic space he tends to confuse his readers by attempting to synthesize the two concepts into one. He says, "The complex industrial pole, ... modifies its immediate geographical environment ... it gives birth to other centres of accumulation and concentration..."[22] From an abstract space concept he appears to have moved to a more fundamental space concept of growth centres.

Subsequent literature devoted to Perroux's theory has been involved with striving to determine exactly what the expressions 'pole' and 'centre' explicitly related to within the confines of his theory. Darwent (1969) wrote,

> "The terms growth poles and growth centres... have been used in vague indistinct and distressingly over-simplified ways, there being almost as many meanings ascribed to them as author's writing about them..."[23]

He also states that,

> "... since all units must have a location and since in all regional economic development the question of 'where'? looms large, then despite the fact that poles are independent of geographic space, their existence within it poses complex problems unexplained by growth pole 'theory'."[24]

Further problems are caused by even greater semantic differences. For example, Darwent goes on to say that,

"... various authors use different terms combining, for instance, the words 'pole', 'centre', 'areas', 'point', 'nuclei', and 'nodes' in different ways to designate the same phenomenon."[25]

Attempts have been made to elaborate on Perroux's theory and to develop a pattern which appears to cover all contingencies. For example, R.P. Misra, in writing on India, envisioned:

1. service centres at the local level,
2. growth points at the subregional level,
3. growth centres at the regional level, and,
4. growth poles at the national level.[26]

Obviously, this interpretation by this particular writer is an attempt to differentiate the theory into a systematic hierarchical pattern.

It would appear that the followers of this growth pole or growth centre concept have 'jumped the gun' in seeking to fit an incomplete, inconsistent, and unfinalized 'theory' into a real world situation. Rather than being an accepted body of theory the concept has not

developed beyond the hypotheses stage*. As Lasuen (1969) points out in reference to the adherents of the theory, "... they have not been concerned with testing, reformulating and completing Perroux's hypothesis on growth pole dynamics."[27]

According to Perroux and to Schumpter, the most significant and positive instrument to growth was embodied in the notion of an innovation. As Perroux stated, "Innovation introduces different and (or) additional variables in the economic horizon and plans of dynamic entrepreneurs..."[29] Other authors have recognized this as a key element in the body of theory. Lasuen (1969) remarks, "... the activity creating a growth pole was essentially a sectoral and a geographic disturbance not because of its

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*The writings of D.F. Darwent perhaps do more in terms of differentiating the distinction between 'poles' and 'centres' than any other contemporary author. The following viewpoints are his.
"... he [Perroux] defines growth poles only and specifically in relation to abstract economic space and not in relation to geonomic (or geographic) space...
The distinction which it is necessary to preserve in the growth pole notion, between economic space in which poles are defined and geographic space in which they happen to have a location, is a basic and important one...
The semantic confusion of attributing to a location the growth characteristics of the pole (industry) which happens to be located there has been made repeatedly.
Most authors on growth poles agree that in order to act as a pole the industry under consideration must satisfy the three criteria of large size... a rate of growth faster than that of the economy... a high degree of interlinkage with other sectors."[28]

larger than average size, nor because of its higher multiplier, but because it was an innovation.*"[30] M.D. Thomas (1969) makes several key observations in reference to innovations. These are namely:

> "First, it may be helpful for us to think of innovations as contributing to the continued growth or establishment of growth poles in several ways - for example,
> 1) by improving the competitive position of industries in which they are adopted.
> 2) by making it possible through the development of new products to establish new industries in the growth pole, and
> 3) by making it possible to establish industries that for economic reasons could not have been previously located in the pole.
> Number (1) is relevant with respect to the pole's existing industries through time, whereas (2) and (3) focus on the pole's need and quest for new industries if it is to endure."[31]

Practical applications of Perroux's theory have occurred more frequently in the developing countries of the world. The idea that a centre or pole could be established in a selected region, with expectations that the resultant benefits would approach those as found in the cities of the developed countries, led to the belief that this structural form of development would prove to be most advantageous to these countries. Current literature offers several examples of the adoption of a growth centre strategy in developing countries, (Salih, Pakkasem, Lo, Honjo, Mathur). Apparently, not all applications have

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* The emphasis upon an 'innovation' as being a key element within growth pole discussions is germane to presentations to be introduced in future chapters.

been successful. An-Jae Kim, for example, in his study of South Korea cites:

> "While this basic aim [rapid industrialization] of the development strategy has, by the usual indicators of growth, appeared to have been achieved, a number of problems such as dependency on external sources for food and raw materials and heightened interregional inequalities, have put a slight dent in this success model."[32]

No review of the growth pole concept would be complete without passing reference to other 'theories' that have been introduced following Perroux. The concomitant theories of G. Myrdal (1957) and A.O. Hirschman (1958) employ similar phraseology in expressing the concept of regional development. Myrdal uses the terms 'backwash' and 'spread effects' to describe the negative and positive spatial consequences of economic activity within a region. Hirschman refers to 'polarization' and 'trickle-down' effects in describing similar situations. The basic difference in ideology stems from Myrdal's viewpoint of advocating strong government intervention to effect changes in the economic and social environment.[33] Hirschman, on the other hand, believes more in the free enterprise sytem. This sytem, be believes, will induce business investment into the economy as manufacturers seek to increase profits. Eventually, industries will spin off into peripheral or backward locations resulting in benefits to these areas.[34] Hirschman's proposed 'developed north' and

'underdeveloped' south was embodied into J. Friedmann's (1972) version of 'core' and 'periphery'.[35] The 'core' took the place of 'developed north' and 'periphery' from 'underdeveloped south'. This core-periphery model was basically an elaboration of the theory of polarized development.

These 'theories' were mentioned briefly to make the reader aware that seldom does any theory stand by itself. By this is meant that other researchers, no doubt, look to enhance or give more enrichment to the initial theory, yet at the same time expound their own points of view. For an example of this the opposing views of Myrdal and Hirschman, regarding government assistance to industry, might be viewed as a challenge to Perroux who advocated or assumed a certain degree of governmental assistance would be provided in aiding businesses to become established.[36]

This government assistance to industry appears to be a trend within Canadian development and will be looked at in subsequent chapters.[37] The uniqueness of the Canadian scenario will be defined within the boundaries of Perroux's theory and not that of his contemporaries, although many examples of how their theories may find a better 'fit' will probably be most evident from time to time.

## The Product Life Cycle

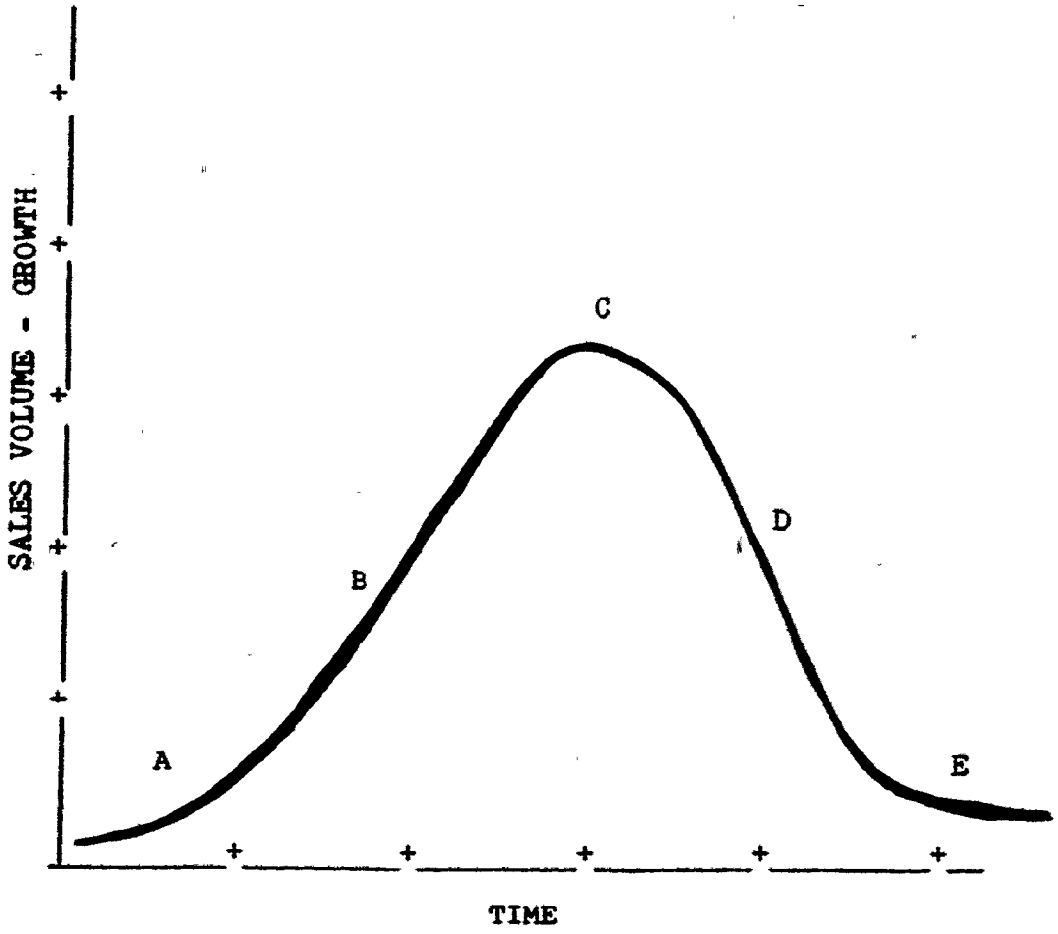
Virtually all new products have a limited lifetime before they are replaced by, or modified through, a new or different innovation. During this lifetime the normal progression is one of accelerated growth until some sales' peak is reached, through time, then a decrease in sales is visible as the demand for this product lessens. The market for replacement parts only is generally small. Perroux recognized this when he wrote about industry growth. He said, "Their rate of growth, accelerated at first during a series of periods, attains a limit, past which they experience a relative decrease."[38] Figure 1-1 on the following page pictorially illustrates this process.

This process, of the rise and decline of an innovation, has many far reaching implications upon the developmental process of a growth pole industry. The product life cycle of an item varies with demand for that particular item, its general acceptability by the consumer, the degree to which it replaces another product, and the amount of replacement units that can be sold, over time. To the manufacturer this means a constant need or demand for new products in order to remain competitive.

Normally, as an innovation leaves the drawing board to become a production item, there is a heightened level

FIGURE 2- 1

PRODUCT LIFE CYCLE




A. New product is introduced

B. Increased sales to point C

C. Point at which sales achieve maximum penetration

D. Sales decline to a point E

E. Sales occur for replacement parts only

of activity within the manufacturer's plant. Possibly, machines have to be modified, redesigned, or new ones purchased in order to output the new product. As well, there is an increased demand for workers to look after this new process. Once the machinery is in operation and the workers in place then the laws of supply and demand will come into play, to determine how much of this product can be profitably outputted. Once the product has been established in the marketplace, the degree to which the manufacturer will reap a higher profit becomes a function of his manufacturing costs. One of these costs is the annual salary of his workers. As the demand for his product lessens then one means of decreasing his fixed costs is to search for a location where labour is cheaper than at the existing site. While this is only one example, the same thought process would be involved when looking for an area where local taxes, land prices, rent, etc. would be possibly cheaper. The cumulative effect of these measures, if a suitable location could be found, could mean that the manufacturer might tend to move his operation to the cheaper site or else establish a second unit of production in that region. The decision as to whether or not to move to a new location is both difficult and complex.

One necessary part of remaining in business is to be

able to have products that the consumer requires. Through product development new products are brought into the marketplace. This usually is perceived as an innovation. The industry with the innovative product interacts with the rest of the world in many ways, for example, a high degree of interaction or linkage has to take place with the supplier of the raw material in order to ensure that the material meets the specifications of the product. Perhaps machine adjustments are required of a major order in which case the manufacturer has to have interaction with the supplier of his machinery. If new dies have to be made, which is a certainty for a new product, then perhaps outside expertise will be required to design and test the dies. This will mean a linkage with a tool and die supplier. The final product goes to the marketplace. This means that a line of supply has to be maintained between manufacturer and distributor. A higher linkage effect will appear as the manufacturer sets out a campaign to sell these items. This could mean interaction with various advertisement agencies, printers, writers, and the like. Again a high level of linkages is assumed. No manufacturer can exist in a vacuum. He has to interact with other manufacturers, suppliers and customers in order to remain in business. The Custom Profile Industry is no exception to this rule. Because many of the items it

produces are innovative, inasmuch as they have never appeared on the market in that particular material, for example vinyl siding, a high linkage factor has to be maintained between all parties in order to market these products.

One of the factors inherent within the decision making process is the degree to which governments involve themselves within the economic scenario. A part of most governmental planning is to try to stimulate development within backward regions. Canada, for example, has many programs which are designed to aid and assist the more backward areas of the country, (Walker, 1980 and Lander/Hecht, 1980). These programs can act as the catalyst in the decision to seek other cheaper locations. While a growth pole industry, by its very nature, would not need assistance from outside sources, the noticeable efforts by governments to move some development into peripheral/hinterland regions, gives an added dimension to the growth pole theory. The fact that assistance, usually financial, is available, makes it easier for the manufacturer to make the move to other areas.

Summary

Perroux's original hypothesis, that development takes place in selected centers through the vehicle of an industrial growth pole, has been widely incorporated into lit-

erature. While this concept of growth has found favour within the academic community, from a pragmatic point of view it has suffered from applications within the real world. One area where some degree of success has been observed is in the underdeveloped nations of the world, although this is far from a total success story. There does not appear to be one clear-cut strategy that embraces all the possibilities of the theory as it is used in practice.

Perroux's early writings were basically concerned with industrial activites as found in economic space. He contended that this economic space escaped all cartography. His later writings broadened this concept to include the idea of geographic space.

Perroux's idea that innovations lead to development, and eventually to even more development, is one perspective which this research intends to look at very closely. However, one major problem in studying the various segments of the PVC industry, in terms of size, sales, and employment, is the fact that there is no individual Standard Industrial Classification (SIC) for the components which go to make up the specific Plastics Industries. Rather, in a somewhat loose manner, all the various companies or processes are lumped together under the overall classification of SIC 165. This eliminates the possibi-

lity of being able to use Statistics Canada data for the Profile Industry. However, for this study, data supplied by different segments of the industry should prove adequate in helping to test the basic hypothesis whether it can be considered a growth industry.

The uniqueness of the materials used in the manufacturing process by this industry plus the innovative nature of the final end products, leads towards a high level of interaction, or linkages, between the business in question, the raw material suppliers, the machinery manufacturers, the tool and die makers, the distributor and the consumer. Many of these finished products come about from specifications in architectural designs, so that this is one example of a somewhat unusual area within which linkages might be found.

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## CHAPTER III

## METHODOLOGY

The Metropoitan Toronto region is, without question, recognized as a growth centre within Southern Ontario. The decision was made to address this area as the focal point of the study as this is where the majority of the Custom Profile Extrusion businesses have traditionally located.

As the writer had been associated with members of the Custom Profile Extrusion Industry, while employed at B.F. Goodrich Canada Inc. (1959-1980), in part as Supervisor of Customer Service for the Chemical Division (1969-1972), then as Manager of Market Research (1976-1980), an a priori knowledge about this industry had already been formulated.

In the preparation for this research renewed acquaintances were made with members of The Society of Plastics Industries (SPI). This agency is the recognized spokesman for all the industries associated with the plastics' field. With the help of SPI a tentative list of Custom Profile companies was established. This list was amended and expanded by suggestions from Mr. M. McClardie of PV Trim Ltd., by Mr. R. Verrall, formerly of Creators Canada Ltd. and by Mr. B. Richmond, Divisional Sales Manager (Chemical), at B.F. Goodrich Canada Inc. These additions

were necessary as only those companies which were in existence during 1980 were being considered in this research. Since 1980 some firms had gone out of business, or had moved to new locations and several new companies had joined the ranks. Some firms, which were extruding profiles, such as pipe, were, however, excluded from this research as they did not constitute a part of the profile industry per se. For example, as can be noted from Table 1-3, the producers of Pipe and Fittings are listed separately from Profile Extruders. Their size differentiates them into a different category.

In all, some forty companies were identified as belonging to the PVC Profile Extrusion category. (A list of these companies is contained within Appendix E). Of these companies, thirty-three were interviewed over a four month period. The purpose of these interviews was to obtain first-hand knowledge about the industry in general and about the operation of the specific company in more detail. As a part of the interview a questionnaire was given to a senior member of each company. Those companies which were not interviewed were mailed a questionnaire. In all, some twenty-eight companies responded to the questionnaire. The interviews and the data from the questionnaire form the major material which was necessary to explore the idea whether or not this industry segment

fulfills the requirements to be a propulsive factor in a growth pole concept.

In order to gain some background to the Metropolitan region a meeting was arranged with Mr. Ken Craig, P. Eng., Industrial Development Consultant of the Toronto Area Industrial Development Board. The information provided proved to be invaluable, inasmuch as it gave a detailed macro overview of the industrial areas both within the City of Toronto and the peripheral/suburban regions. (A map showing these industrial sites is detailed in Appendix A). These industrial designated areas gave an overview as to the scope of site possibilities that any manufacturer could have access to, thus proving that it was not a lack of site availability which was the prime cause for the Custom Profile Industries having moved from the region. The Industrial Development Board is a key to planning the success of future growth within the Metropolitan Toronto area. It, along with the Steering Committee on Economic Development, advocates the policies which are directed to maintaining and increasing the viable nature of the Metropolitan area.

In order to determine the scope of both Federal and Provincial programs available to assist industry, the Department of the Ministry of Industry was contacted. (The programs are tabled in Appendix B). From the view-

point of the manufacturer it is important to be aware of these programs. Whether a particular company is thinking of expanding its operations into new regions, or proposing to enlarge in situ, the importance of the worth to the manufacturer should not be overlooked. Competitors also have the same advantage to avail themselves of these same programs. Also, any entrepreneur can elect to avail himself of these programs to establish a new plant, providing, of course he can meet the requirements as detailed throughout Appendix B.

Aggregate statistical information on the Plastics Industry was obtained from various Statistics Canada publications. Specific reference to these and various Standard Industrial Classification (SIC) codes will be detailed in following chapters. While specific information under a special SIC code is not avilable for the Custom Profile members, per se, the relevancy of being able to relate at least the total plastics market to other markets, in particular the total Goods Producing Industries, was felt to be pertinent to the direction of the study. Not only do statistics provide a degree of measurement for products produced within a country by they also point out the problem of imported products, of a like nature, which could have been manufactured in Canada.

A further method used to obtain information con-

cerning the Plastics Industry and, in particular, the group of firms under study was an analysis of those industries which were supportive, or thought to be supportive, of this group. If a growth pole industry exhibits centripetal forces, i.e. a pulling towards it of a certain beneficial element or elements, then the following adjuncts to this industry must qualify as being representative of those forces. A review of the following suppliers was detailed in order to establish both their connectivity and their relationship to the PVC profile group. These industries were comprised of:

1. Mold, Tool and Die Makers,
2. Materials and Suppliers,
3. Machinery and Suppliers.

It was felt that a strong relationship would exist between these supplying industries and the Plastics Industry. If this held true, then at least one criterion, that of centripetal attraction, would have been determined. The data to support this hypothesis will be forthcoming from the results of the questionnaire.

The information gathered from the various sources was used to construct a logical portrayal of the Custom Profile Extrusion Industry as it appeared in 1980. Presented in subsequent chapters will be the results of the analysis of this industry. For the most part the Tables

offered in evidence of the findings will be explained in more detail. The techniques used to analyze the relevant data include: percentage distributions, graphics, weighed results, estimated averaging and estimated growth curves. Because there is not an unlimited amount of data readily available, certain assumptions from the data that is available will have to be made. These assumptions will be postulated on what is felt to be prime evidence, as supplied by the members of the industry in their responses to the questionnaire. The results obtained from an analysis of the questionnaire will be reviewed as to their relevancy to Perroux's theory. An explanation of why the results conform to the theory will be detailed, or conversely, why they do not.

# CHAPTER IV

## CHARACTERISTICS OF THE GROWTH POLE INDUSTRY

### Theoretical Perception

In Chapter II the ideas relating to the life cycle of a product were introduced. While a few companies may rely on only one product, most firms try to market several products. However, most products have only a limited lifespan. They are replaced by either more competitive materials or else by a new innovation. Within the context of the Custom Profile Industry the adaptability to producing new products is the key to an endurance within the marketplace. In terms of where this industry stands, in the product life cycle, depends upon the particular product. As there are many different products the industry, by and large, is at varying points within the cycle at any moment in time. For example, while window components are exhibiting a very strong growth curve, replacing wood, the market will eventually reach a point where a decline in sales will be evident. For many companies in this industry, progress has been escalating year by year as more and more products have been converted into PVC. Whether or not the upper limits of this conversion process have been reached is difficult to determine as a new breakthrough could happen at any time. However, many manufacturers feel that even though total sales will continue to escalate for

several years to come, the immediate horizon is not replete with new products that can immediately be converted into the PVC process. For this reason they feel that they are possibly at the height of the growth curve at the present time. Once many of their products run the cycle then their sales will decline to a point where it will be unprofitable to continue further production. Future success will come in the form of new innovations for their process. Perhaps with this in mind many of these manufacturers are looking to find locations which, overall, will offer opportunities to lower their operating costs. If this is true then a shift within this industry should be readily visible. This would take the form of a directional shift to some particular region that, for whatever reason, is perceived as offering lower costs to the manufacturer. Perroux summarized this decline of an industry when he said. "Speculation... is reduced... and shifts elsewhere."[1] While this industry segment is not, in 1980, in a decline the long range speculation is that this could be one likely scenario. It is within this context that empirical evidence of a visible shift in manufacturing will be detailed.

Empirical Evidence

For the Canadian Plastics Industry, as a whole, the number of companies and workers involved are presented in

TABLE 4-1

NUMBER OF COMPANIES AND WORKERS

IN THE PLASTICS PROCESSING INDUSTRY

| Region or Province | Number of Companies | Percent of Total | Number of Workers | Percent of Total |
|---|---|---|---|---|
| Maritimes | 19 | 1.5 | 762 | 1.0 |
| Quebec | 265 | 20.6 | 13,476 | 18.3 |
| Ontario | 775 | 60.2 | 51,965 | 70.6 |
| Prairie | 142 | 11.0 | 4,961 | 6.8 |
| B.C. | 79 | 6.7 | 2,390 | 3.3 |
| Total | 1,287 | 100.0 | 73,554 | 100.0 |

Source: Developed from 1982 Directory & Buyers' Guide.

TABLE 4-2

DISTRIBUTION OF PLASTICS COMPANIES

AND WORKERS IN ONTARIO

| Region | Number of Companies | Percent of Ontario | Percent of Canada | Number of Workers | Percent of Ontario | Percent of Canada |
|---|---|---|---|---|---|---|
| Ontario | 755 | 100.0 | 60.2 | 51,965 | 100.0 | 70.6 |
| Canada | 1,287 | — | 100.0 | 73,554 | — | 100.0 |
| Metro Toronto | 307 | 39.6 | 23.9 | 21,845 | 42.0 | 29.7 |
| 25 Mile Radius from Toronto | 474 | 61.2 | 36.8 | 29,311 | 56.4 | 39.8 |
| Region between Metro Toronto and the 25 Mile Radius | 167 | 21.5 | 13.0 | 7,466 | 14.4 | 10.2 |

Source: Developed from 1982 Directory & Buyers' Guide, and Table 4-1

The average number of workers per company can be derived from the above Table. These are:
All of Canada, 57. Metro Toronto, 71.
25 Mile Radius from Toronto, 62.
Region between Metro Toronto and the 25 Mile Radius, 45.

Table 4-1. Ontario exhibits the greatest majority of companies and workers in this industry with 60.2 per cent and 70.6 per cent, respectively. But where in Ontario are these companies located? Table 4-2 supplies, in part, the answer. As can be seen from this Table, 39.6 per cent of the companies are situated within Metro Toronto and a further 21.5 per cent within a distance of twenty-five miles. This leaves 38.8 per cent of the companies in the rest of the province. These figures confirm the high concentration of the industry within greater Toronto. Similarly, the number of workers employed in this industry are also concentrated as shown in Table 4-2.

Even though 61.1 per cent of these firms are situated within greater Toronto this means that, conversely, 38.8 per cent are located outside of this region. This diffusion from the growth centre confirms Perroux's hypothesis that a decentralization occurs at the end of the growth phase of a growth pole. The question arises as to whether this movement of industry would affect the well-being of the Metro Toronto region? As evidence that it is of vital concern to the Metro Toronto area the following evidence is presented.

In a report issued in November, 1980, the Toronto Steering committee on Economic Development[2] saw as its task "... the creation or retention of jobs through sup-

porting the development of new or the retention of existing industries."[3] In the report they also identified five adverse trends upon the Metro Toronto area. These trends were the following:

(a) the decline of manufacturing as a source of employment,

(b) shift in investment to resource development in Western Canada,

(c) inflation,

(d) high rates of unemployment, particularly in specific sectors of the economy.

(e) negative attitudes between municipal government and business and industrial leaders.[4]

They go on and state that, "... these trends have created the following serious problems for Metropolitan Toronto."[5]

1. a slowdown in the growth rate of assessment resulting in increased municipal property taxes,

2. rising costs of municipal services,

3. an unwillingness of the private sector to invest in Metropolitan Toronto.

The report also gives an economic scenario of the Metropolitan Region. Following are a few of the highlights:

(a) employment in large firms (20 or more employees) represents only about one half of total employment.

(b) between 1975 and 1979, total employment in the Toronto C.M.A. (Census Metropolitan Area), increased from 1.3 million jobs to

1.5 million, or by 40,000 jobs annually.

(c) over the next decade, growth in manufacturing employment will take place increasingly in the surrounding regions and in other urban centres in Ontario and Canada.

(d) the future growth of Metropolitan Toronto's economy is tied to the service-producing industries, transportation and communication, trade, finance, real estate, personal and business services and public transportation.[6]

The concerns expressed by this committee obviously are intended to cover all the industries within the Metro region and not specifically the Plastics Industry. However, their report clearly demonstrates that industry is vacating the Metro Toronto region. From the standpoint of the Plastics Industry although the Metro Toronto area had 39.6 per cent of the Plastics Companies within it, (refer Table 4-2), from their discussions it would tend to reflect the concern that this may not be the situation over the next decade.

External Economies

External economies are perceived as those factors, within an economy, which impact upon any industry and where some interaction, from a socio-economic perspective, takes place between them. Normally, an industry does not have control over these factors, for example, an increase in raw material prices, but is affected by these actions to some degree or another. However, if the industry

doubles its requirements of materials from a supplier, then it is helping to disrupt these external economies, with varying repercussions to the supplier in general.

Perroux brings into his discussion on growth poles the consequences of external economies. He makes the distinction between firms operating, "In the general equilibrium of perfect competition..." where price is, "... the sole indicator by which its decisions are bound to those of other firms; firms are interdependent only through price,"[8] to the situation, "... in which the profit of one firm is a function of its own sales, its purchase of inputs, the sales of another firm, the purchase of inputs by another firm."[9] He goes on to say, "... the two firms are no longer connected only by way of price; they are also connected by sales and by the purchase of inputs..."[10] The Plastics Industry, both as a purchaser of raw materials and a seller of various finished products, exhibits such connectivity and interacts to a high degree of visibility with other industries. Table 4-3 lists three industrial sectors with which a high degree of interaction occurs. Changes in inputs by the Plastics Industry will impact directly upon these supplying industries. These impacts could be positive or negative. An increase in raw materials purchased would be

TABLE 4-3

LOCATION OF SUPPORTIVE INDUSTRIES

OF THE PLASTICS INDUSTRY IN CANADA

| Region or Province | Mold, Tool & Die Makers | % Total | Materials & Suppliers | % Total | Machinery & Suppliers | % Total |
|---|---|---|---|---|---|---|
| Maritimes | — | — | 1 | .4 | 1 | .3 |
| Quebec | 25 | 11.2 | 50 | 21.8 | 48 | 14.5 |
| Ontario | 187 | 83.9 | 171 | 74.8 | 258 | 78.0 |
| Prairie | 4 | 1.8 | 4 | 1.7 | 12 | 3.6 |
| B.C. | 7 | 3.1 | 3 | 1.3 | 12 | 3.6 |
| Total | 223 | 100.0 | 229 | 100.0 | 331 | 100.0 |

Source: 1982 Directory & Buyers' Guide

perceived as a positive impact; a lower amount of purchases as a negative impact. In terms of where these supplying companies are located, Table 4-4 provides part of the answer. Collectively, over forty per cent of these companies are located within Metro Toronto, with Materials & Suppliers accounting for 47.4 per cent and Machinery & Suppliers accounting for 44.6 per cent. The region between Metro Toronto and the twenty-five mile radius accounts for 29.8 per cent and 27.1 per cent, repsectively, of these same suppliers. From the similar concentration to the Plastic Industry one can hypothesize a high degree of connectivity between the members of the Plastics Industry and these Supplying Industries. However, the fact must be kept in mind that these industries also service other firms as well as the members of the Plastics Industry.

This interaction with these supplies can be viewed as lateral linkages to the PVC industry as they are supportive of the plastic fabricators. These linkages are deemed necessary if the PVC fabricator is to be supplied with machinery, tools, and parts. The evidence given in Table 4-4 suggests that a high degree of linkage exists between the supportive industries and the PVC industry.

One possible reason for a close link between suppliers and producers is the high volumes of raw materias that are purchased by the Plastics Industry. Table 4-5

TABLE 4-4

NUMBER AND LOCATION OF

PLASTIC SUPPORTIVE INDUSTRIES IN ONTARIO

| Industry | | Number of Companies | Percent of Ontario | Percent of Canada |
|---|---|---|---|---|
| Mold, Tool & Die Makers | (A) | 187 | 100.0 | 83.9 |
| Materials & Suppliers | (B) | 171 | 100.0 | 74.7 |
| Machinery & Suppliers | (C) | 258 | 100.0 | 77.9 |
| Metro Toronto | (A) | 61 | 32.6 | 27.4 |
| | (B) | 81 | 47.1 | 35.4 |
| | (C) | 115 | 44.6 | 34.7 |
| 25 Mile Radius of Toronto | (A) | 90 | 48.1 | 40.4 |
| | (B) | 132 | 77.2 | 57.6 |
| | (C) | 185 | 71.7 | 55.9 |
| Region between Metro Toronto and the 25 Mile Radius | (A) | 29 | 15.5 | 13.0 |
| | (B) | 51 | 29.8 | 22.3 |
| | (C) | 70 | 27.1 | 21.1 |

Source: Developed from 1982 Directory & Buyer's Guide, and Table 4-3.

TABLE 4-5

CANADIAN APPARENT CONSUMPTION OF MAJOR PLASTIC RESINS & MATERIALS (MILLIONS OF POUNDS)

| Material Type | Canadian Production | Imports | Exports | Total Apparent Canadian Consumption |
|---|---|---|---|---|
| Low Density Polyethylene | 968.4 | 57.4 | 242.7 | 707.7 |
| High Density Polyethylene | 447.8 | 81.6 | 143.4 | 357.4 |
| Polypropylene | 233.5 | 39.7 | 61.8 | 211.8 |
| ABS | 81.6 | 8.8 | 2.2 | 88.2 |
| Polystyrene & Styrene Copolymers | 242.7 | 75.0 | 22.1 | 295.6 |
| Poly Vinyl Chloride | 419.1 | 64.0 | 68.4 | 397.1 |
| Polyester, Unsaturated | 59.6 | 4.4 | 4.4 | 52.9 |
| Total | 2,452.7 | 330.9 | 545.0 | 2,110.7 |
| Other Resins | 536.4 | 428.9 | 24.1 | 949.0 |
| Grand Total | 2,989.1 | 758.9 | 569.1 | 3,059.7 |
| Poly Vinyl Chloride (PVC) as a per cent of the Grand Total | 14.0 | 8.4 | 12.0 | 13.0 |

Source: 1982 Directory & Buyers' Guide, page 6, chart 1.

shows the quantity of major plastics that are produced, then consumed, by the Plastics Industry. The nature of these various plastics is that for every pound that is sold, in the raw material form, through conversion an equal amount of finished product is generated. While some may be lost due to scrap, most if not all is recoverable. The area with which this research is concerned is PVC. From Table 4-5 it is evident that as a percentage of total plastics production, PVC accounts for 14.0 per cent of all plastics that are produced in Canada; 8.4 per cent of all plastics imports; 12.0 per cent of all exports; and 13.0 per cent of the overall market.

This interplay which takes place between industry and supplier proposes a degree of linkage between them. For the PVC industry this represents a backward linkage to his supplier, in this case for PVC resin or PVC compound, for the raw materials which he needs in order to output a finished product. This linkage will be influenced by, the amount he buys, the price he has to pay, and the availability of a secondary source. The PVC industry might also elect to import its raw material needs from such places as Japan, Germany, on the U.S.A. The degree of linkage to each place will again depend upon the volumes that he purchases. From this it can be seen that the linkage factors not only operate from an in-country point

of view but also from sources external to the country. The degree to which purchases are increased or curtailed will have a direct bearing upon the manufacturing output of the PVC supplier.

The impact upon the resin producers can be seen from Table 1-2 presented in the introduction. PVC capacity has increased from 260 million pounds in 1978 to 660 million pounds in 1980. Also, the VCM capacity increased, in the same time period, from 200 million pounds to 500 million pounds. Without getting into the technical details, it is fairly obvious that this increase in demand for the raw material, PVC resin, has had positive impacts at that level of production. This increase in resin output is directly attributable to the rising levels of demand by the Plastics Processors. As such, there is definitely a high degree of connectivity between supplier and end user. This connectivity offers a substantiation of Perroux's concept of a 'key' industry. As he stated, "This is an industry [a key industry] which has the property, when it expands its sales (and its purchases of productive services) of increasing and sales (and purchases of services) of another or several other industries."[11] In this case the Plastics Industry would qualify as the 'propellent' industry and the PVC raw materials manufacturers as well as the wholesalers and retailers would be examples of the

'impelled' industry. The PVC raw materials supplier also has linkages to his supplier of monomer, which in turn can impact upon the production, (more properly, the amount converted from natural gas or oil) of the base raw material.

From a standpoint of forward integration the Custom Profile Extrusion Industry can have an impact upon the linkages that it has created with the wholesalers and retailers that sell the finished products. An innovative product, quickly accepted by the consumer, can have substantial repercussions upon the dealer. The most classic example would be that of the hoola-hoop, a fad which generated high profits for the dealer in a short period of time. However, the majority of products do not fall into this type of category. The acceptance, for example, of innovative products, such as window components, lead to an upsurge of business for the dealer. In this sense, there is a very high degree of linkage between these dealers and the Custom Profile industry.

The fact that the Plastics Industry also produces a growth stimulus in firms is revealed in Table 4-6. Since 1971 the total domestic market has risen from 1.2 billion dollars to 5.0 billion dollars in 1980. These fabricators sell many of their finished products to wholesalers and retailers. In this manner these products impact upon the overall success of their businesses. These market figures

TABLE 4-6

ESTIMATED CANADIAN MARKET FOR PLASTICS FABRICATORS

(BILLIONS OF DOLLARS)

| Year | Shipments | Imports | Exports | Domestic Market |
|---|---|---|---|---|
| 1971 | 1.00 | .25 | .05 | 1.20 |
| 1972 | 1.19 | .29 | .07 | 1.41 |
| 1973 | 1.48 | .36 | .10 | 1.74 |
| 1974 | 1.92 | .55 | .13 | 2.38 |
| 1975 | 1.91 | .54 | .11 | 2.34 |
| 1976 | 2.20 | .63 | .14 | 2.69 |
| 1977 | 2.45 | .77 | .20 | 3.02 |
| 1978 | 3.11 | .86 / | .26 | 3.71 |
| 1979 | 3.92 | 1.05 | .36 | 4.61 |
| 1980 | 4.30 | 1.14 | .44 | 5.00 |

Source: 1982 Directory & Buyers' Guide, page 6, chart 3.

introduced in Table 4-6 also support the hypothesis that this industry constitutes a growth industry.

To qualify as a growth pole industry, the firm or group of firms under investigation must qualify, according to Perroux, as a 'key' industry. Evidence that the Plastics Industry qualifies as a 'key' industry is provided in Tables 4-7, 4-8, and 4-9.

In Table 4-7 a comparison is made between the national output of Goods Producing Industries and those of the Plastics Fabricating Industries, as measured by Gross Domestic Product (GDP). Since 1975, which incidentally was not a banner year for the Plastics Industries because of raw material shortages created by the so-called oil crisis, the Plastics Fabricating Industries have captured an ever increasing share of GDP. The figures are fairly self evident and help to support the hypothesis that this industry is a 'key' industry in Canada. Table 4-8 shows the market shares using the market as defined by SPI. The Statistics Canada figures, detailed in Table 4-7, are not a true picture of the output of the Plastics Fabricating Industry. Some plastics' producers are registered in categories other than SIC 165 as their primary function is other than Plastics. One example of this would be the Wire and Cable Industry. While wire is coated with PVC, their initial production is for products made into wire

TABLE 4-7

GROSS DOMESTIC PRODUCT BY INDUSTRY

CURRENT DOLLARS

(MILLIONS)

| Year | A Total Goods Producing Industries | B Non Durable Goods Industries | Plastics Fabricating Industries (SIC 165) | Plastics Fabricating Industries as a Per Cent of: A | B |
|---|---|---|---|---|---|
| 1975 | 60,051.8 | 15,750.6 | 1066.3 | 1.8 | 6.8 |
| 1976 | 67,559.5 | 17,696.0 | 1227.3 | 1.8 | 6.9 |
| 1977 | 73,973.4 | 18,602.8 | 1370.7 | 1.9 | 7.4 |
| 1978 | 83,079.4 | 20,796.5 | 1682.8 | 2.0 | 8.1 |
| 1979 | 99,095.3 | 23,430.4 | 2126.0 | 2.1 | 9.1 |
| 1980 | 110,296.5 | 25,817.5 | 2427.6 | 2.2 | 9.4 |

Source: Gross Domestic Product by Industry, Statistics Canada, Catalogue 61-213, Table 1, pp. 2-3 and Table 3, p. 22.

TABLE 4-8

MARKET SHARES FOR PLASTICS FABRICATORS

-CURRENT DOLLARS

(MILLIONS)

| Year | A Total Goods Producing Industries | B Non Durable Goods Industries | Plastics Fabricating Industries Refer to Table 4-6 | Plastics Fabricating Industries as a Per Cent of: A | B |
|---|---|---|---|---|---|
| 1975 | 60,051.8 | 15,750.6 | 2,340.0 | 3.9 | 14.9 |
| 1976 | 67,559.5 | 17,696.0 | 2,690.0 | 4.0 | 15.2 |
| 1977 | 73,973.4 | 18,602.8 | 3,020.0 | 4.1 | 16.2 |
| 1978 | 83,079.4 | 20,796.5 | 3,710.0 | 4.5 | 17.8 |
| 1979 | 99,095.3 | 23,430.4 | 4,610.0 | 4.7 | 19.7 |
| 1980 | 110,296.5 | 25,817.5 | 5,000.0 | 4.5 | 19.4 |

Source: Developed from Tables 4-6 and 4-7.

cable. In this case their production would be reported in another category for SIC identification. While the estimates of the Canadian plastics market, provided in Table 4-8 and taken from Table 4-6, may not be totally correct, they are probably closer to the true picture of the Plastics market in Canada than those stated by Statistics Canada. Regardless of which values are more or less correct, the results shown in Table 4-8 reinforce the findings in Table 4-7, only to a much greater degree. The results definitely point to the fact that this industry does qualify as a 'key' industry, within Perroux's concept.

Perroux, in speaking of the propellent industry, says that, "They have... rates of growth of their output higher than the average rate of growth of industrial output and of national output."[12] It has already been demonstrated in Table 4-8 that output in this industry versus the national output has increased at an accelerating rate. In fact, looking at the output in Non Durable Goods, the rate of growth has been from $15,750.6 million in 1975 to $25,817.5 million in 1980; or, an increase in output of 63.9 per cent. In the same time frame the Plastics Fabricating Industry had an increase of 113.7 per cent. The latter rate is nearly twice the national average.

TABLE 4-9

ANNUAL GROWTH OF PLASTICS FABRICATING INDUSTRY COMPARED TO GNP

| Year | Millions of Current Dollars | | Per Cent Growth Over Preceeding Year | |
|---|---|---|---|---|
| | GNP | Plastics Fabricating Industries SIC (165) | GNP | Plastics Fabricating Industries SIC (165) |
| 1971 | 94,450 | 540.4 | | |
| 1972 | 105,234 | 545.5 | 11.4 | 19.4 |
| 1973 | 123,560 | 799.2 | 17.4 | 23.8 |
| 1974 | 147,528 | 1056.4 | 19.4 | 32.2 |
| 1975 | 165, 343 | 1066.3 | 12.1 | .9 |
| 1976 | 191,031 | 1227.3 | 15.5 | 15.1 |
| 1977 | 208,868 | 1370.7 | 9.3 | 11.7 |
| 1978 | 230,353 | 1682.8 | 10.2 | 22.8 |
| 1979 | 261,961 | 2126.0 | 13.7 | 26.3 |
| 1980 | 289,859 | 2427.6 | 10.6 | 14.2 |
| 1971 - 1980 increase | | | 206.9% | 349.2% |

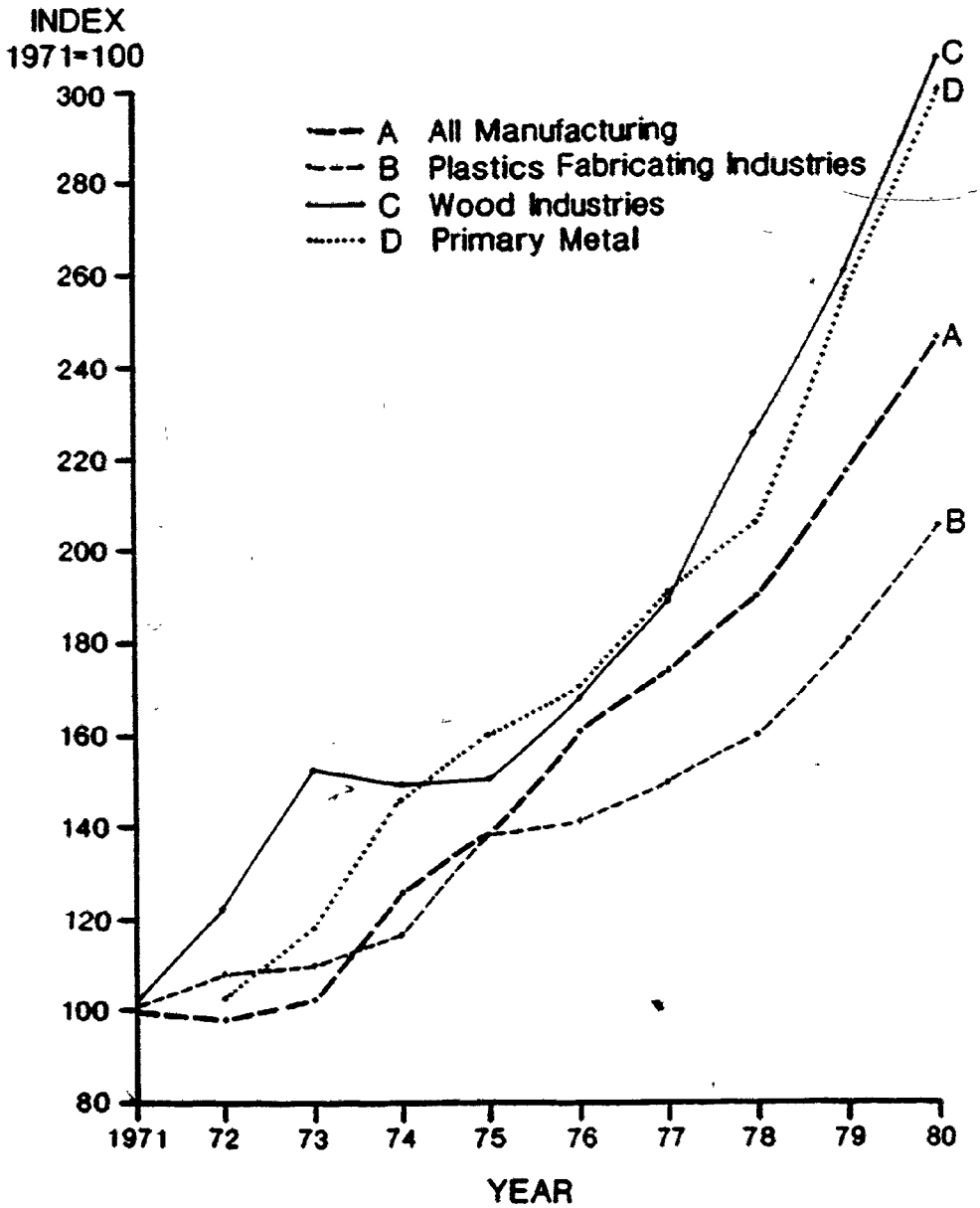
Source: Canadian Statistical Revue, Statistics Canada, Catalogue 11-003E, November 1982, p. 8 and Gross Domestic Product by Industry, Statistics Canada Catalogue 61-213 and 61-1005.

Gross National Product (GNP) is frequently used to measure a country's prosperity, or lack of it. Table 4-9 compares recent GNP growth of Canada with growth in the Plastics Fabricating Industries. At the national level, GNP has increased from 1971 to 1980 by 206.9 per cent; while that of the Plastics Fabricating Industries increased by 349.2 per cent. These results help to confirm the hypothesis that this industry has growth faster than the national average and thereby qualifies as a 'key' industry.

Another observation that Perroux makes is the affect of pricing policies by the propellent industry. He says that, "The propellent industry can increase its sales to utilize its fixed capital more fully... it can make further price reductions inducing further increase in the sales of the impelled industries."[13] The empirical evidence to partially support this hypothesis is found in the Industry Selling Price Indexes for Canadian industry. Figure 4-1 shows the results, on index, of price increases for certain industry segments from 1971 to 1980. Within the last decade prices have tended to increase fairly rapidly. Yet, even though prices in general have been on the increase, the Plastics Fabricating Industry has increased least in price when compared to other products. This perceived lower pricing position may have been one

**Figure 4-1**

**COMPARATIVE SELLING PRICE INDEX**




Source: Statistics Canada 63-224 (1976), P. 40, Table 1-14, and 63-224 (1982) p. 54, Table 1-25.

positive force that has allowed this industry to make the gains that it has during the past decade. From the evidence of Figure 4-1 it would appear to heavily support the theoretical discussion that lower pricing has possibly helped this industry to achieve more sales, and, at the same time has shown a relationship to Perroux's hypothesis.

Summary

The main thrust of this chapter was to present valid empirical evidence to demonstrate that the Plastics Industry is truly representational of a growth pole industry. Its physical location in space is within the growth centre of Metropolitan Toronto. The initial discussion of the growth centre was injected to give an overview of the industrial nature in the Toronto region during 1980. Evidence was introduced to show the high degree of concentration of industries and workers within the Metro region. Yet, at the same time, a diffusion of industry into peripheral regions was also noted. Discussion was centered around the possible impacts of this noticeable dispersion upon the industrial well-being of Metro Toronto. One reason why this shift was taking place was possibly because of a perceived directional shift occurring within the product life cycle of the Plastics Industry. While still in a growth stage, in 1980, certain manufacturers

felt that perhaps the future growth may not be as rapid as in the past, hence a need to look for alternative, less expensive sites.

External economies were introduced and related to Perroux's perception of them within a growth pole concept. Evidence was presented that showed a high degree of interaction between the Plastics Industry, resin suppliers, and retailers and wholesalers. The degree of linkage which takes place between the various entities and the Plastics Industry, either as a backward, forward, or lateral linkage strengthens the ties between these groups. The idea of linkages between industries forms a major characteristic of Perroux's theory.

The determining factors which underlie the notion of a 'key' industry were examined in detail and supportive evidence was introduced to substantiate that, on the whole, the Plastics Industry did qualify as a 'key' indus-

felt that until fresh evidence is produced to the contrary, that the argument presented within the body of the chapter substantiated the point of view that the Plastics Industry can be considered as a growth pole within the industries of Ontario.

## REFERENCES FOR CHAPTER IV


1. Perroux, F. (1955), "Note on the Concept of Growth Poles." In I. Livingstone, (ed.) Development Economics and Policy: Readings. London: George Allen & Unwin, 1981, p. 182.

2. Municipality of Metropolitan Toronto. An Economic Development Strategy for Metropolitan Toronto. Nov. 1980, Toronto: By The Steering Committee on Economic Development.

3. Ibid., p. i.

4. Ibid.

5. Ibid., p. ii.

6. Ibid., p. 10.

7. _____. Personal interview with Mr. K. Craig, Industrial Development Consultant for the Toronto Area Industrial Development Board. Toronto, July, 1982.

8. Perroux, op. cit., p. 183.

9. Ibid.

10. Ibid.

11. Ibid., p. 184.

12. Ibid., p. 182.

13. Ibid., p. 184.

## CHAPTER V

## EMPIRICAL INVESTIGATION OF THE PROFILE INDUSTRY

In Chapter II, page 20, reference was made to the contribution of Schumpeter to Perroux's theory. Three of the causal actions which he proposed, as being the innovative forces behind development, will be examined; specifically as they apply to the Custom Profile Extrusion Industry. The three causal factors which will be related to this industry segment are:

1. the introduction of a new good,
2. the opening of a new market, and,
3. the conquest of a new source of supply.

Also, the empirical expectations, presented in Chapter I will be looked at to ascertain their validity within a growth pole concept.

The vehicle for examining these relevant features of the growth pole theory will be presented in the results of the findings from the questionnaires returned by the firms of the Custom Profile Industry.

### Background to the Survey

In order to develop some insight as to the degree of contribution that the Custom Profile Industry felt that they had given to Canadian industry overall and their place within this framework, each company was asked to

respond to a questionnaire. This questionnaire was designed to reveal certain pertinent information about the state of the Profile Industry. This information, it was envisioned, could then be used in an academic endeavour to give empirical support of Perroux's conceptualization of a growth pole industry. By addressing the criteria embodied within the theory and relating the findings of the study/-research to these criteria, supportive evidence of Perroux's theory would be forthcoming.

While some questions were basic in seeking responses to readily identifiable facts, such as how long this particular firm had been in business, others were left open-ended to derive the specific viewpoint of that firm. The site selection preference can be used as an example of the latter. It was felt that for the survey to be successful the number of questions had to be kept within reasonable limits. At the same time, the questions had to be of sufficient depth to be useful to the research yet not cause too much work for the firm. It is hoped that this survey fulfilled both of these conditions.

As was mentioned in the opening chapter, some forty companies were identified as being part of the Custom Profile Industry, in 1980. Of these, twenty-eight, or seventy per cent, returned the questionnaire. Appendix E details the location of these companies and the question-

naire is given under Appendix G.

Survey Questions, Results and Interpretation

The questionnaire was comprised of twenty-two questions. Each of the questions will be dealt with sequentially and an assessment as to their relevancy within a growth pole context will be analyzed.

---

1. How long has the company been located: (Refer to Appendix G, question 1.)

   a) at this address
   b) any other
   c) address of (b)

---

Twenty-eight responses were received for this question. The answers averaged across all respondents were (a) 9.9 years and (b) 3.7 years, respectively.

The significance of these values is that they show that this industry segment is relatively new within the Canadian manufacturing scene. This is one criterion of a growth pole industry.

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2. Average annual number of employees for the years: (Refer to Appendix G, question 2.)

   1950 - 1960 - 1970 - 1980

---

Out of twenty-eight responses only five answered to the number of employees in 1970; one for 1960 and none for

1950. All supplied information for 1980. As the industry is new in origin there were no companies in business prior to 1970, or at least, very few.

The reason for asking this question was to determine the relative size of these companies in relationship to other manufacturers within Ontario. As well, this information was needed in order to develop a market profile of this industry. This will be present later.

From the data in Chapter IV, reference Table 4-2, the average number of workers per company in the Plastics Industry, for all Canada, was 57; for Metro Toronto, 71; for a 25 mile radius, 62; and in the region between Metro Toronto and the 25 mile radius, 45. The survey results showed an average of 61 workers per company, for 1980, which corresponds with the previously calcualted values.

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3. Your estimate of the total PVC profile extrusion market for the following years, in millions of dollars. 1950 - 1960 - 1970 - 1980 (Refer Appendix G, question 3.)

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Of the twenty-eight responses to this question only four elected to venture an estimate for 1970. No-one indicated an estimate prior to 1970. All responded with a detailed estimate for 1980.

The market estimates ranged from under $50 million to slightly over $150 million, for 1980. This wide range probably relates to, in part, the perception of the individual answering the question. Also, the diversity of products makes it virtually impossible for any one individual to be knowledgeable about all the different commodities that this group produces. End products would range from vinyl siding, automotive body side trim, cove base, window components, downspouts and eavestroughing, all the way to a myriad of general extrusions in all shapes and sizes.

By inference, it can be seen that the products offered by this industry are new in nature, having been, for the most part, only offered within the marketplace during the past decade. In the types of products that this industry produces is evidence that they are 'innovative' and thus qualify for consideration within the growth pole concept.

The next question was asked in an attempt to define in a more precise manner exactly what the total market should be for their products. Refer appendix G, question 4. Of the twenty-eight responses only seventeen offered this information for the year 1980. Four furnished replies for 1970. One reply showed sales for 1960. None for 1950.

Had all the companies replied to the questionnaire then it would have been a simple task to add up the responses thus establishing the exact market for 1980. Also, a growth trend could have been established. However, this was not the case. Consequently, some assumptions had to be made to derive an industry total even for 1980.

By using the national average of dollars of sales per worker, as indicated in Chapter IV, Table 4-1, which showed 73,554 workers and estimated value of shipments from Chapter IV, Table 4-6, of 4.3 billion dollars, the figure of $58,560 per worker was ascertained.

The results from the companies that responded to this question showed an average of $55,748 per worker. By using the overall average for the total industry, then these profile companies would have a collective market of: $58,460 x 40 (Companies) x 61 (Workers) = $142.6 million. Or, using the average from the Profile Extrusion Industry: $55,748 x 40 (Companies) x 61 (Workers) = $136.0 million. Also, the division in sales showed that 62 per cent of the products went into the Canadian market and 38 per cent to the export market. In terms of actual dollars, somewhere between $88.4 and $84.3 million was sold domestically and between $54.2 and $51.7 million exported.

While the Custom Profile Extrusion Industry has to operate within a competitive marketplace, these firms,

collectively, hold a monopoly on PVC extruded products. As such, in the broadest sense, they are in a position to decide where their products will be sold. With this in mind the following question was asked. Refer to Appendix G, question 5.

Of the twenty-eight responses, twenty-seven answered this question. The results are shown in Table 5-1. The values for these regionalized sales are shown in Table 5-2. The sales figures were derived by applying the per cent shown for each region, in Table 5-1, to the total derived domestic sales of $84.3 million, which were determined in the answer to question 4.

TABLE 5-1

REGIONAL SALES PER CENT

| | | |
|---|---|---|
| 1. | Metro Toronto | 35.8 |
| 2. | Eastern Ontario | 24.6 |
| 3. | Western Ontario | 15.0 |
| 4. | Northern Ontario | 2.7 |
| 5. | Quebec | 8.6 |
| 6. | Atlantic Region | 4.4 |
| 7. | Western Region | 8.9 |
| | Total | 100.0 |

Source: Derived from responses to question 5.

TABLE 5-2

REGIONAL SALES

MILLIONS OF DOLLARS

| | | |
|---|---|---|
| 1. | Metro Toronto | 30.2 |
| 2. | Eastern Ontario | 20.7 |
| 3. | Western Ontario | 12.6 |
| 4. | Northern Ontario | 2.3 |
| 5. | Quebec | 7.2 |
| 6. | Atlantic Region | 3.7 |
| 7. | Western Region | 7.5 |
| | Total | 84.3 |

Source: Derived from Table 5-1, and sales determined in question 4.

One of the most expensive investments that a new business has to make involves the purchase of equipment. Within this industry segment the expense is heaviest in the purchasing of extruders. As these are of a highly technical nature, one of the research questions was to determine where these extruders were purchased. Refer to appendix G, question 6. It was hypothesized that most purchases would also come from the growth centre, Toronto. Of the twenty-eight responses all replied to the question. The results are shown in Table 5-3.

TABLE 5-3

EXTRUDERS PURCHASED IN RELATIONSHIP TO PLANT LOCATION

PER CENT

| | | |
|---|---|---|
| a) | Within 10 miles | 20.2 |
| b) | Within 20 miles | 20.5 |
| c) | More than 50 miles | 22.5 |
| d) | From USA, or Overseas | 36.8 |
| | Total | 100.0 |

Source: Derived from responses to question 6.

Even though the survey results indicated a high level of imported technology, many of the respondents felt that, in actual fact, the percentages would be even higher. The reason for this is that even though machinery was bought within a reasonable distance from their plant, in many cases they were not dealing with Canadian manufacturers of these products. A more likely scenario is that upwards of seventy per cent of all extruders are manufactured outside of Canada. Southern Ontario then becomes a focal point of sales of highly specialized equipment, mainly produced outside of the country. This influx can be viewed as a centripetal force from the world core plastics production regions. Without an interaction occurring in the growth centre it is not possible for a developmental process to

begin at a growth pole. Therefore, this is a key process in the foundation of a growth industry. In a sense, the importing of this high technology makes the centre appear to be a peripheral entity, which it is, but which does not prevent the PVC Industry from acting as a growth pole. The reason for such high imports is basically because of a lag in manufacturing technique where Canada has not yet achieved the degree of sophistication necessary to produce these machines. However, this could eventually lead to manufacturing taking place in Canada to a greater degree than is now evident, i.e. a growth pole industry.

In order to make finished products from PVC the raw material has to be extruded through a die. Each different product requires a different die. In an effort to determine where these dies came from a question was included which asked where the dies were produced or bought. Refer appendix G, question 7. Twenty-seven responses were received to this question which are tabled below.

TABLE 5-4

CONSTRUCTION OF DIES
PER CENT

| | | |
|---|---|---|
| a) | Made in the plant | 77.5 |
| b) | Made within Metro Toronto | 13.5 |
| c) | Made outside of Metro Toronto | .9 |
| d) | Made outside of Canada | 8.1 |
| | Total | 100.0 |

Source: Developed from responses to question 7.

As the nature of any specific design of a die is highly secretive it is understandable why these items are not given to outside agencies to manufacture, unless it is absolutely necessary. Because the making of dies is a highly specialized art most firms employ their own die makers. From discussions with the industry members it was learned that in the initial stages of this industry's development that most of the craftsmen offering this expertise were of European origin. In the beginnings of a growth industry most of the work is done in-house. Later developments may lead to sub-contracting parts to other companies. This industry can be seen as exerting forces which attract a highly specialized group of skilled workers to it.

Growth Perception

For an industry to remain competitive it has to be innovative. A growth pole industry should exhibit large growth intentions if it is to qualify in this regard. Any lack of faith in the forward and upward direction of the hoped for future growth potential of the business will only lead to restraint. Restraint can happen in many ways but basically a decrease in capital spending for new machinery and equipment, along with lesser amounts of capital devoted to research and development, will eventually disqualify any manufacturer from his position in the market-

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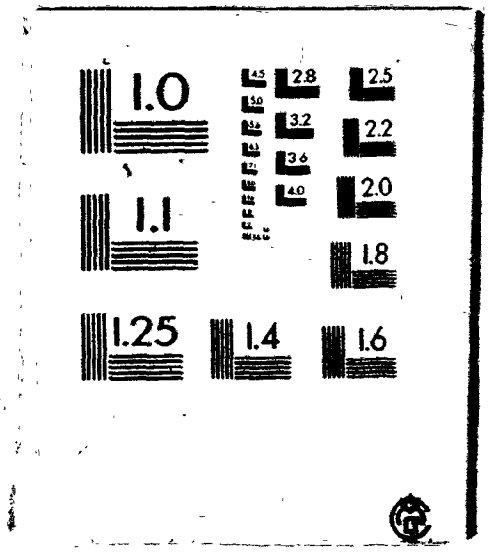

place. As the outlook for anticipated growth is paramount to the precepts of basic planning, the question was asked of this industry as to how they perceived the growth of their industry over the course of the next thirty years. Refer to appendix G, question 8. All of the twenty-eight respondents answered this question. Table 5-5 details their ranges of speculation.

TABLE 5-5

PROFILE INDUSTRY MARKET GROWTH

PER CENT

| | Per Cent Ranges | | | | | | |
|---|---|---|---|---|---|---|---|
| Years | 0-2 | 3-5 | 6-8 | 9-12 | 12-15 | Over 15 | Total |
| 1980 to 1989 | 4.8 | 19.0 | 4.8 | 42.9 | 19.0 | 9.5 | 100.0 |
| 1990 to 1999 | -- | 4.8 | 23.8 | 38.1 | 23.8 | 9.5 | 100.0 |
| 2000 to 2009 | -- | 9.5 | 19.0 | 38.1 | 14.4 | 19.0 | 100.0 |

Source: Developed from responses to question 8. Rates are average annual per cent, based on total industry dollar sales, unadjusted for inflation.

The outlook for this industry, indicated in Table 5-5 is quite strong. With the majority electing to project growth between the 9 and 12 per cent levels, it reinforces quite dramatically the belief that this group of manufacturers perceive themselves as constituting a growth

segment.

Impact Upon Competitive Products

Although this market segment is not overly important in terms of the total Plastics Industry, inasmuch as it represents only 3.2 per cent of sales in 1980, ($136 million of $4.3 billion), the question has to be asked as at what expense to other industries has this segment achieved the success it has to date? Refer appendix G, question 9.

All of the twenty-eight respondents answered this question. The greatest majority, sixty-four per cent, agreed that their products had displaced traditional materials to an extent greater than 75 per cent. Or, another way of looking at this would be to say that in 1980, of this industry's total sales, about $100 million was derived from products that had the potential to be substituted with PVC.

Members of the industry feel that growth in the future will result as innovative products are developed and introduced into the marketplace. Some sales will occur as more products currently made with traditional materials are replaced with PVC.

Government Impact

Present day government policies and programs usually

are directed more towards helping the underdeveloped regions as opposed to regions that appear to be enjoying a degree of success. Perroux speaks of some assistance coming to the propellent industry through the form of government subsidy. He states:

> "The increase in the sales of the propellent industries may thus result from anticipation of the effect produced in the impelled industries, or, if there is hesitation or slowness on the part of the heads of propellent industries, from State encouragement through, for example, a subsidy."[2]

Under normative developmental conditions in a growth pole industry government assistance is considered minimal. It is the perception of the industry leaders that seek to enhance profits by, either entering new markets or expanding existing ones. In later developmental stages government support might be sought in order to help finance a new or expanded venture. However, in today's business environment the role of government to try to strategically direct industry towards underdeveloped regions is of major importance. As an area of the research consideration had to be given to the amount or degree of impact that governmental support has had on this industry. With this in mind, the next question was asked. Refer appendix G, question 10.

The answers to the twenty-eight returns are detailed in the following table.

TABLE 5-6

DEGREE OF GOVERNMENT IMPACT

PER CENT

| | | |
|---|---|---|
| a) | None whatsoever | 40.9 |
| b) | Some impact | 54.5 |
| c) | A lot of impact | 4.6 |
| | Total | 100.0 |

Source: Developed from responses to question 10.

The responses detailed in Table 5-6 reveal that the contribution of government support to this industry has been, at best, minimal. As a new industry within the Canadian economy it might at first be thought that a high degree of governmental involvement would have been seen. However, this was not the case as only 4.6 per cent of the responses indicated this. The responses would seem to clearly indicate that a growth industry does not need government support in order to be successful. The respondents to part (a) showed quite vividly that industry will develop in spite of financial aid being available, and independent of governmental influences.

Continuing with this line of thought, the next question was put to the current applicability of government

programs to this industry. Refer appendix G, question 12. All respondents of the twenty-eight replied to this question. Their answers are detailed below.

TABLE 5-7

ADEQUACY OF CURRENT GOVERNMENT PROGRAMS

| | | PER CENT |
|---|---|---|
| a) | No help available | 4.5 |
| b) | Help available but inadequate | 54.5 |
| c) | Adquate help available | 31.9 |
| d) | Unfamiliar with aid programs | 9.1 |
| | Total | 100.0 |

The results appear somewhat ambiguous. In actual fact they are somewhat misleading, unless they are interpreted in the proper manner. Because of the high degree of respondents answering favourably to part (c), it would tend to indicate that the respondents to part (b) were either unfamiliar with all the programs or that the programs offered did not fit in with their needs.

Manufacturing Formation

Perroux states, "In a complex industrial 'pole' which is geographically concentrated and growing, economic acti-

vities are intensified because of proximity and human contacts." Within the same paragraph he goes on to say that, "Various types of producers, entrepreneurs, skilled workers and industrial labour are formed, influence each other, create their traditions, and eventually share common interests."[3] However, Perroux fails to qualify how these interests come together. Conceptually, they exist within the framework of economic space, but, practically, they have to occur at a point in geographic space, presumably for some reason. The reasoning why these companies 'formed' where they did became the next question. Refer Appendix G, question 11. All twenty-eight respondents answered this question. Table 5-8 records the outcome of their choices.

In an article by the Toronto Real Estate Board,[4] their assessment of the features which make it attractive for business to locate within the Metro area concur with the findings of this particular question. They say, "There are numerous factors which favour Toronto as an industrial location... Firstly, the depth and composition of the labour force... There is a large pool of available labour in all categories, including skilled and unskilled workers. (This agrees with item 2). Wages remain reasonable... (An agreement with point 5). ... proximity to major markets. One third of Canada's buying power lies

TABLE 5-8

LOCATIONAL FACTORS

PER CENT

| | | |
|---|---|---|
| 1. | Convenience to market | 17.5 |
| 2. | Availability of labour | 17.0 |
| 3. | Availability of building/property | 16.6 |
| 4. | Home of management | 12.4 |
| 5. | Lower labour costs | 7.3 |
| | Aggregate of top five responses | 70.8 |
| 6. | Transportation costs | 5.7 |
| 7. | Availability of raw materials | 3.9 |
| 8. | Financial aid | 3.0 |
| 9. | Local co-operativeness | 3.0 |
| 10. | Centre of particular industry | 3.0 |
| 11. | Transportation facilities | 3.0 |
| 12. | Adequate power | 2.1 |
| 13. | Less unionization | 1.5 |
| 14. | Favourable tax structure | .9 |
| 15. | Miscellaneous | 2.1 |
| 16. | Decentralization of operation | -- |
| 17. | Climate | -- |
| | Total | 100.0 |

Source: Developed from responses to question 11.

within 100 miles of Toronto. (This confirms point 1). A final factor underpinning the industrial market is the availability of serviced land and vacant buildings."[5] (An agreement with point 3). These points of agreement with the findings of the research would tend to reinforce Perroux's statement when he says, "... each firm maximizes its own profits by its own decisions..."[6]

Industry Clustering and Impact

Perroux says, "Successful innovation by some entrepreneurs acts as an example to others and provokes imitations, themselves creative."[7] Identified within Appendix E are the firms which are located within the Metropolitan Toronto region, as well as those in other areas. As most of these firms are located fairly closely to each other it was hypothesized that a high degree of connectivity would exist between them. The connectivity would exhibit itself in such interactions as, exchanges of ideas, sharing new technological innovations, changes in the market and the like. The next question was asked to try to determine this connectivity. Refer appendix G, question 13. Their responses are shown in Table 5-9. Of the twenty-eight respondents, all answered the question.

As can be seen from the numbers of companies currently involved in the extrusion process, this successful innovation has promoted development of like industries.

However, as the results from the survey tend to indicate, there is not a high degree of connectivity existing between them. It could be that the nature of this particular industry differs radically from other industries. Or, perhaps the nature of the high degree of technology associated with it leads to a higher degree of secrecy and hence a decreased exchange of ideas between companies. An alternative way of looking at why there is so little connectivity between these firms could be the monopolistic nature of the industry. With apparently enough sales for everybody there would be little reason to share technology or ideas.

These empirical findings tend to beg the question as to why a location within Metropolitan Toronto, for example, is important? Obviously, for this industry, it is not because a high degree of exchanges take place between themselves but perhaps the exchange takes place more between suppliers and purchasers. Other factors, such as the size of available market, better labour costs, or superior transportation routes, would better qualify why these firms locate where they do.

Manufacturing Control

When Perroux stated that, "Each state tries to exploit for the exclusive or principal benefit of its

TABLE 5-9

PERCEIVED ADVANTAGES FROM LOCATING NEAR LIKE INDUSTRIES

PER CENT

| | | |
|---|---|---|
| 1. | None | 77.4 |
| 2. | Exchange of ideas, technology, etc. | 13.6 |
| 3. | Makes suppliers move closer | 4.5 |
| 4. | Keep up to date more readily with changes in market demand | 4.5 |
| 5. | Competitiveness as an incentive | — |
| 6. | Would rather locate elsewhere | -- |
| 7. | Other | -- |
| | Total | 100.0 |

Source: Derived from response to question 13.

nationals the poles under its control..."[8] he was expressing the desire of most governments in the world today. The concern of politicians for many years has been the presence of foreign ownership dominating domestic industry. A concern within the Plastics Industry is the extent to which the industry is dominated by foreign ownership. An attempt to clarify the current position within the Profile Industry was undertaken. Refer Appendix G, question 14. The results are tabled below.

TABLE 5-10

OWNERSHIP OF CANADIAN PLASTIC EXTRUSION COMPANIES

PER CENT

| | | |
|---|---|---|
| 1. | Canadian interests | 72.1 |
| 2. | American interests | 18.8 |
| 3. | European interests | 9.1 |
| 4. | Other | -- |
| | Total | 100.0 |

Source: Derived from responses to question 14.

The expectation was that because Canada, per se, tends to import new technology, which a growth pole normally needs or has, then we would expect a high degree of

foreign ownership in the industry. On the surface, the empirical evidence, seen in Table 5-10, does not support this argument. However, the reader must be cautioned in interpreting these results. As only twenty-five respondents replied to this question there might be room for doubt as to whether or not only those companies who are controlled by Canadian interests elected to reply to this question. Also, the fact that the survey was directed only to the year 1980 does not present evidence of what might have occurred withn the industry since. For example, as J. Britton pointed out in his recent article," ... in manufacturing as a whole 52 percent of manufactured production is generated by foreign-controlled plants, ..."[9] He goes on to say that, "In the high-technology areas in particular, foreign-controlled shipments account for more than 65 percent of the industry total: rubber and plastics (73 percent), ..."[10]

However, as has been demonstrated in question 4, thirty-eight per cent of this industry's output goes to the export market. They would appear to fulfill Britton's argument of the types of companies or industries that Canada requires when he says, "Canadian firms can take only one route - they will succeed only through innovative developments of products that allow them to compete on a product-performance basis."[11]

Industry Attractiveness

In speaking about a 'complex industrial pole', Perroux states, "Collective needs emerge (accomodation, transport, public services)..." "Various types of producers, entrepreneurs, skilled workers and industrial labour are formed,..."[12] For a growth pole industry to remain viable it obviously requires workers, both types which Perroux has already mentioned, to perform the related manufacturing tasks. If follows that these firms, to be attractive to the workers, must offer certain benefits that will draw workers to them. Also, it is assumed that these workers have a domicile somewhere. One of the means of measuring how attractive this industry is, it was thought, to the workers, would be to look at the distance they travel to their place of employment. It was reasoned that the farther they travel to their place of work, the more attractive the industry became. Refer appendix G, question 15.

The results are exhibited in Table 5-11, from the twenty-eight respondents who answered this question.

These results would tend to reinforce the belief that this industry has a high degree of attractiveness associated with it. The workers of today tend to live in suburban environments where the quality of life is purportedly better, as opposed to living in the actual downtown

core. Growth of suburbs, catering to the wants and needs of the populace, has been a common developmental process in North America. The average of all the respondents showed that a high per cent of the workers, 68.5 per cent, travelled between five and ten miles to their place of employment.

Basically, industrial locational emphasis has been placed on a broad East to west axis, as well as a narrower North to South axis. The network of roads servicing these areas are dominated by Hiways 401 and 400, respectively. These arteries provide access for the employees to get to their places of employment and also for shipments of raw materials and finished goods. These highways provide the linkage factor for producer, consumer and worker.

TABLE 5-11

AVERAGE DISTANCE TRAVELLED TO PLACE OF WORK

PER CENT

| | | |
|---|---|---|
| a) | Less than one mile | -- |
| b) | Less than three miles | 4.5 |
| c) | Less than five miles | 22.5 |
| d) | Between five and ten miles | 68.5 |
| e) | More than ten miles | 4.5 |
| | Total | 100.0 |

Source: Developed from responses to question 15.

TABLE 5-12

TRANSPORTATION FACILITIES EMPLOYED

PER CENT

| | | |
|---|---|---|
| a) | Carriers owned/leased | 24.6 |
| b) | Common truck carrier | 73.1 |
| c) | Rail or ship | 2.3 |
| | Total | 100.0 |

Source: Developed from responses to question 16.

Transportation

In the prior quote from Perroux the emergende of transport or transportation linkages was referred to in connection with the industrial pole. The next question asked what means these industries employed for transporting their finished goods. Refer to Appendix G, question 16. Their responses are shown in Table 5-12.

Realistically, the results showed what had been anticipated. The majority, 73.1 per cent, used the common truck carrier along with 24.6 per cent who owned or leased trucks. Finished extrusions, as a rule, tend to be rather light in weight. Therefore, the costs involved in shipping these products tends to be low. This is an advantage over similar products produced from wood or steel.

Consideration of New Site Selection

In speaking of the aspects of structural change

Perroux states, "Another aspect characterizing structural change in a national economy is the diffusion of the growth of an industry (or group of industries)"[13] It is suggested that part of this 'diffusion of growth' comes about as firms either establish plants in some other place than the growth centre or else move their existing manufacturing facilities to an entirely new location where expectations for further growth are higher. Perroux goes on to say that certain consequences are felt when a pole begins to decline.[14] While it would not seem, at the present time, that this industry is declining, (in fact quite the opposite is true), the fact that other locations might hold some attraction should be investigated. An effort to determine what locational foci attracted these industries was made. Refer appendix G, question 17. The responses of the twenty-eight respondents are shown in Table 5-13. While not in the original question, as a choice, category (g) had to be added. This covered the responses of several firms who adamantly refused to consider any other site but Metro Toronto. As many companies have only been established for a short period of years, the question of looking for other or alternative sites, at this moment in time, was not uppermost in their minds. While the question might appear to be somewhat biased, inasmuch as Metro Toronto was not included originally as a

possible choice, the respondents soon adjusted this by including it in their replies. This helps to reinforce prima facie evidence of this region being a growth centre. In essence, the results shown in Table 5-13 help to explain two possible realities; the one, that Metro Toronto has been and is still perceived as the area where a location is most desired; and, two, that a large number, 40.9 per cent, perceive Western Ontario as an area for future development. The results also possibly show that some companies have Metro Toronto as their main marketplace, while others are more international in outlook and that a location other than that of Metro Toronto could be equally desirable. This, with more empirical investigation, could be the grounds for a division of this industry into two growth poles. Perroux speaks of the, "... linking up of industrial poles, ..."[15] and the, "... birth to other centres of ... concentration."[16] If a diffusion of this industry was to take place, as suggested, then a link with the major pole, Metro Toronto, would still be maintained.

Rising Energy Prices

Perroux claims that, "The profit of each individual firm is a function of its sales and of its purchases of inputs."[17] One of these inputs is the cost of energy. This manufacturing process is subjected to increased energy

TABLE 5-13

AREAL PREFERENCE FOR NEW SITE SELECTION

PER CENT

| | | |
|---|---|---|
| a) | Maritimes | -- |
| b) | Quebec | -- |
| c) | Eastern Ontario | 13.6 |
| d) | Western Ontario | 40.9 |
| e) | Northern Ontario | 4.5 |
| f) | Any province West of Ontario | 13.6 |
| | Total | 72.7 |
| g) | Metro Toronto only | 27.3 |
| | Total | 100.0 |

Sources: Developed from responses to question 17.

prices from two standpoints. One, as applied to the increases of primary producers involved in natural gas and petroleum production and, two, as energy costs necessary to operate the manufacturing process. How do these firms face rising costs and what impact do they have upon profit? Also, what was their perception of rising energy prices from a viewpoint of how it impacted upon competitive firms producing similar products, but from different materials? In order to determine an answer to these questions, or at least to get some perspective on these problems, the next question was asked. Refer appendix G, question 18. Twenty-eight responses were received to this question. In some cases the respondents indicated that certain actions were of equal weight. The results can be found in Table 5-14. The responses to i. (a) reveal that, according to the majority of the respondents, rising energy prices have not affected this industry as much as it has hurt producers of competitive products. In their view, seventy per cent indicated that rising oil prices had actually given them an edge on their competitors who were manufacturing products from primary materials.

As well, thirty-three per cent said that they had increased prices to their customers as a means of offsetting these higher energy prices. Forty-eight per cent said that they had looked to alternative sources for energy.

TABLE 5-14

IMPACT OF RISING ENERGY PRICES

PER CENT

| | | | |
|---|---|---|---|
| i. | (a) | More competitive with primary products. | 70.0 |
| | (b) | Less competitive with primary products. | 25.0 |
| | | (Those that said, about the same). | 5.0 |
| | | Total | 100.0 |
| ii. | (a) | Increase of sales | 70.0 |
| | (b) | Decrease of sales | 20.0 |
| | | (Those that said, about the same). | 10.0 |
| | | Total | 100.0 |
| iii. | (a) | More cost-control concious | 95.0 |
| | | (Those who said, no difference). | 5.0 |
| | | Total | 100.0 |
| iv. | (a) | Increase prices to customer | 33.0 |
| | (b) | Accept lower margins | 48.0 |
| | | (Those who said, a combination of both) | 19.0 |
| | | Total | 100.0 |
| v. | (a) | Look for alternative sources | 48.0 |
| | (b) | Maintain the status quo | 52.0 |
| | | Total | 100.0 |

Source: Developed from responses to question 18.

These results indicate that this industry has taken several approaches to the problem of rising energy costs in order to overcome them, to remain competitive.

Research and Development

Perroux asserts that, "Successful innovation... acts as an example to others..."[18] However, he fails to detail specifically what he means by an innovation or how it comes into being. Innovations, or new product-techniques, are brought about through the concentrated efforts of industry in the expectations of either upgrading existing products or being able to develop new ones. If a Canadian Plastics manufacturer is to provide these innovations, then how much of the actual development work does he do himself, versus technology developed in other countries? Research and Development (R&D) is vital to ensure these new products and techniques. Or, as Perroux said, "... the products of an industry ... profoundly transformed... and sometimes hardly recognizable compared with their initial forms..."[19] In light of this the next question was asked. Refer appendix G, question 19. All twenty-eight respondents replied to this question. Their replies are shown in the following table.

One of the basic hypotheses was that this industry had achieved the degree of success that it has to date because of the innovative products it has produced. While

Table 5-15 does not show the quantity of these products, it does help in seeing that this industry is actively engaged in research and development. By combining the top two responses they show that 68 per cent of the respondents do between 60 and 100 per cent of their own developmental work. This development leads to new products and new technology.

TABLE 5-15

DEGREE OF R&D WITHIN OWN PLANT VERSUS EXTERNAL SOURCES

PER CENT

| | Per Cent Range of R&D Within Own Plant | Per Cent of Respondents |
|---|---|---|
| a) | 80 to 100 | 45 |
| b) | 60 to 80 | 23 |
| c) | 40 to 60 | 9 |
| d) | 20 to 40 | 5 |
| e) | 0 to 20 | 18 |
| | Total | 100 |

Source: Developed from response to question 19.

Britton, in speaking about R&D in Canada, makes the point that, "Most firms concentrate on the adoption of

existing products, designs and methods to suit Canadian production and sale and not much activity is concerned with developing products that will create new export sales."[20] He also goes on to remark that, "Canadian industry reveals the lack of ability to move ahead with the design, development, and sale of new products that can compete domestically and overseas on the basis of product performance."[21] This growth pole industry would appear to be an exception to the aforementioned broad-brush treatment of Canadian industry. As has been shown, the plastics industry exports thirty-eight per cent of its output. It has been shown in the responses to this question that a high degree of research and development is carried out by this industry. Moreover, his assessment of US industry shows that 'Plastics', per se, rank very highly in their industrial structure (third to be exact),[22] whereas within the Canadian economy they have very little representation. A logical follow through of this feature would be to presume that Canadian industry has a lot of catching up to do. The evidence presented so far in the survey results would lead to the conclusion that steps have already been taken to resolve this difference.

Perceived Future Expansion

Continuing with Perroux's observation that, "... the pole which was a seat of prosperity and growth becomes a

centre of stagnation,"[23] the eventual destiny of any growth pole must somehow reflect in the current attitudes that are prevalent within the manufacturing community today. Any company has the ability to change locations. The subsequent question was asked. Refer appendix G, question 20. The results of their choices can be seen in Table 5-16. These results reflect the point that Perroux was making when he said that poles will eventually stagnate. While these industries exist as a pole, now, in the Metro Toronto centre the evidence from Table 5-16 would tend to suggest that insofar as this industry is concerned, future growth will take place, in the main part, outside of this region. Response (c), carrying almost one third of the weight of the total respondents' selections, may not be adequate to be empirically indicative of a trend to move away from the Metro region. The answer to (b) is somewhat surprising as only 13.6 per cent of established companies would consider expanding within Metro Toronto. The first thought coming to mind is that either the market is saturated or the price of land or rent has become too prohibitive in this region. Yet, The Industrial, Commercial and Investment Division of the Toronto Real Estate Board's study of average industrial rental rates in major Canadian cities showed that Toronto compared favourably with all other major cities in 1978. However, subsequent informa-

TABLE 5-16

PERCEPTION OF GROWTH OCCURRENCE

PER CENT

| | |
|---|---|
| a) Through established plants expanding in situ | 27.4 |
| b) Through established companies expanding into new locations within Metro Toronto | 13.6 |
| c) Through established companies expanding into new locations outside Metro Toronto | 31.8 |
| d) New companies locating within Metro | 13.6 |
| e) New companies locating outside Metro | 13.6 |
| Total | 100.0 |

Source: Developed from responses to question 20.

tion indicates that this trend has changed. Table 5-17 shows a comparison of average industrial rental rates for the years 1978 and 1981. Using the average rate for both years, the average annual per cent increase of rental rates for these same cities is illustrated in Tables 5-18. This shows that over the course of the three year period, 1978 to 1981, Toronto's rates escalated, surpassed only by Vancouver. Even though Table 5-17 appears to show Toronto in a somewhat more favourable light, Toronto is escalating prices for industrial rent at least as rapidly as other areas. Higher prices within the core can only result in manufacturing seeking other sites outside the Toronto core. Of course, rents are only one part of the overheads which a firm must carry. However, if these become too burdensome or if another location can offer more attractive rates, the manufacturer might elect to change locations.

Another very strong factor for a movement from the core of the City of Toronto has been the high realty tax structure in the down-town core. A comparison of different municipalities reveals these differences. These are shown in Table 5-19. This table reveals that, the closer one moves to the city core the higher the realty taxes.

Another factor that has affected the movement to suburban locations is perhaps the high traffic flows evi-

TABLE 5-17

AVERAGE INDUSTRIAL RENTAL RATES

DOLLARS PER SQUARE FOOT, NET

| | 1978 | 1981 | |
|---|---|---|---|
| Toronto | 1.70 - 1.90 | 2.90 - 3.35 | |
| Ottawa | 1.80 - 2.10 | 1.90 - 2.25 | (Ottawa East) |
| | | 2.80 - 3.50 | (Ottawa West) |
| Montreal | 1.75 - 2.00 | 2.85 - 3.50 | |
| Winnipeg | 2.30 - 2.80 | 2.50 - 3.00 | |
| Calgary | 2.50 - 2.75 | 3.75 - 4.50 | |
| Edmonton | 2.65 - 3.00 | 3.75 - 4.75 | |
| Vancouver | 1.50 - 2.60 | 3.25 - 4.25 | |

Source: Toronto Real Estate, 1982, p. 2.

TABLE 5-18

1978 to 1981 AVERAGE ANNUAL PER CENT INCREASE IN RENTAL RATES

| | | |
|---|---|---|
| a) | Toronto | 20.2 |
| b) | Ottawa East | 2.1 |
| c) | Ottawa West | 17.3 |
| d) | Montreal | 18.9 |
| e) | Winnipeg | 2.5 |
| f) | Calgary | 16.5 |
| g) | Edmonton | 14.6 |
| h) | Vancouver | 22.3 |

Source: Developed by the author from Table 5-17.

TABLE 5-19

1981 REALTY TAXES: PER SQUARE FOOT

BASED ON A NEW 25,000 SQUARE FOOT BUILDING

| | | | |
|---|---|---|---|
| **Inner Fringe** | | **North Fringe** | |
| Toronto | $1.18 | Richmond Hill | $0.45 |
| York | .87 | Vaughan | .44 |
| East York | .89 | Marham | .39 |
| **Outer Three** | | Newmarket | .36 |
| Etobicoke | .87 | Whitchurch-Stouville | .36 |
| North York | .87 | | |
| Scarborough | .91 | **West Fringe** | |
| **East Fringe** | | Mississauga | .47 |
| Ajax | .43 | Brampton | .44 |
| Pickering | .39 | Oakville | .43 |
| | | Caledon | .39 |

Source: Toronto Real Estate, 1982, p. 6

dent within the core zone. Although in-city public transportation facilities carry large volumes of workers to and from the suburbs each day, there still remains a high volume of private vehicular traffic that moves in and out of the city each day. The Map in Appendix D, (reprinted with permission of the Toronto Real Estate Board), gives a graphic illustration as to the volume of vehicles impacting upon the core and the contiguous areas on a daily basis. This volume of vehicular traffic, along with the inevitable traffic problems, acts as a negative force upon decisions to locate in the city centre.

Metro Toronto as a Growth Centre

The last question was asked. Refer appendix G, question 21.

In retrospect, this question should have been worded differently. In essence, it was a repeat of the previous question. For that reason the results will not be shown as they add nothing to the research findings that has not already been discussed.

Summary

The objective of this chapter was to show that:

: the Custom Profile Extrusion Industry does represent a growth industry within Southern Ontario.

: as a growth pole industry its location in physical space

is best described as existing within the Metropolitan Toronto region, the growth centre.

: certain evidences would be presented from the results of the survey carried out with the industry members to help substantiate the original hypotheses.

: certain concepts, as advanced by Perroux, would find empirical substantiation within the discourse.

Some substantiation that the Custom Profile Extrusion Industry is a growth industry was gained in the responses to and in the discussion of questions 3, 4, 5, and 8. While their market is small, in relation to the total plastics market, as a contributor to the overall economy their significance cannot be overlooked. Also, the regional impact of sales demonstrates the effect this industry has upon other areas of the economy.

As a growth pole this industry can be found either within the Metro region or contiguous to it. The sites detailed in Appendix F support the fact that a clustering of these firms is evident within this region. The reasons for growth appearing within this centre are examined in the responses to questions 13, 17, and 20.

The basic hypothesis that was assumed was that this industry constituted a growth pole industry. Empirical evidence of the hypothesis can be related to the findings of questions 4 and 5. The product life cycle is basic in

determining a company's success. As the product matures economies of scale from a manufacturing standpoint influence decisions to move to more peripheral sites. While this industry is reasonably new, some evidence suggests that perhaps it has just about reached this stage in its development where the pull of other locations may prove more attractive. As a pole industry it demonstrates certain influences upon its surroundings. This would be seen as the impacts upon suppliers, customers and other industries. These interactions with the economic environment are seen as external economies.

The discourse on various aspects of this industry throughout this chapter, has provided some empirical substantiation of Perroux's concept. The evidence shows that this industry tends to exhibit a propensity to change locations. As a pole industry it may tend to move, through time, as its products mature. Any future movement is likely to be in a Westerly direction. Government impact, in the form of subsidies, have provided some impetus to this industry, although not as much in the initial stages but more so in the maturing stage. As both an innovative industry and as a growth pole industry, it fulfills the concept of a key industry.

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13. Ibid., p. 181.

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15. Ibid.

16. Ibid.

17. Ibid., p. 183.

18. Ibid.

19. Ibid., p. 182.

20. Britton, op. cit., p. 43.

21. Ibid.

22. Ibid., p. 41.

23. Perroux, op. cit., p. 185.

## CHAPTER VI

## CENTRIFUGAL AND CENTRIPETAL FORCES

While the subject of centrifugal and centripetal forces was not dealt with specifically in the preceeding chapter, evidence from the research supports the position that these forces constitute a vital part of Perroux's theory. He said that, "The firm considered as a centre releases centrifugal and centripetal forces. ... It attracts economic elements, supplies and demands, into the space of its plan, or it removes them."[1] A review of how these forces relate to the Custom Profile Industry was indicated.

### Centrifugal Forces

These are seen as forces which this industry imparts to either contiguous areas or peripheral regions. The response to question five, in the preceeding chapter, showed this industry's impact upon peripheral locations. The sales in these regions would have a positive impact upon the local economies as they would provide a source of additional income for that particular area. Also, the projected growth for this industry, as established in the answer to question eight, will have future impacts upon other regions, as well as Metro Toronto.

The fact that products made from PVC are replacing

traditional materials, in many cases, as seen in the response to question nine will have a negative impact upon those industries producing similar products from primary materials.

The total Plastics Industry impacts upon both suppliers of machinery and equipment. Machinery can range from extruders down to more basic nuts and bolts that are needed. Equipment can range from technical requirements in the physical laboratories to new lunch room tables for the employees. All these products have to be made somewhere. In many cases it is because of this industry that they are produced. In terms of the magnitude of these purchases, the following statement by Mr. F. Shammas, Economist, SPI Canada, gives evidence to this. He states,

> "The trend in new investment over the last six years has been rising from a level of $53.3 million in 1975 to $77 million in 1979 with 1980 reaching $78.8 million spent on machinery and equipment. The true figure for investment in machinery and equipment is probably double that or close to $160 million."[2]

(This investment refers to new investment in machinery and equipment in SIC-165, Plastics Fabricating Industry. SIC-165 represents only about half of the total Plastics Industry, according to Mr. F. Shammas.)

One very specific impact that this industry has had on a major supplier has been to B.F. Goodrich Inc. who produce the base polymer, PVC. Since 1970 this company

has been constantly enlarging its plant at Port Robinson, Ontario, to the point where it has achieved world scale capacity, or, capabilities of producing 400 million pounds of PVC per year.[3]

Centripetal Forces

These forces are seen as those which attract various elements to the pole industry.

In this regard, the answers to questions two and fifteen show that this industry employs a certain amount of personnel and that they travel a large distance to get to their place of employment. Also, the fact that the overall industry has been a growth industry has created more jobs to which employees have been attracted. Evidence of this is supplied by Mr. F. Shammas, who has the following to say about the industry: "Thus while plastics shipments account for roughly 3% of manufacturing shipments, employment growth in plastics represented 14% of all the new jobs created by manufacturing in Canada."[4]

Questions six and seven show that the technical expertise associated with this industry, both in the form of machines and machine processes, has an attraction both on a world scale, for extruders, and a local or peripheral attraction for the expertise for producing dies. Question nineteen also shows the technical attraction for expertise in this industry as a high degree of research and develop-

ment is done on an in-house basis.

Whether the forces are seen as centifugal or centripetal, exogenous or endogenous, the fact is that this industry exemplifies the uses of these forces as one would expect from a growth pole industry.

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# CHAPTER VII

# GOVERNMENT INDUSTRIAL INCENTIVES AND THE PVC GROWTH POLE

## Overview

Assistance, by government, in the forms of loans or grants is, or can be, a dynamic tool in the creation of new jobs. These jobs are developed as industry is given the financial means by which it is able to maintain, or expand operations. Whether it is designed to increase output, through the use of new machinery for new technology or simply to fund the maintenance of equipment, the end result is that more jobs are created, or sustained. The relationship between the government and the Plastics Industry will be one means of promoting jobs for the future, as this industry is a growth industry. This relationship between government and the Plastics Industry will be explored within this chapter to see what benefits have been derived for the industry.

In the previous chapter reference was made to the part that government subsidy played in the initial and later development of the industry. While government subsidies do not, in themselves, create growth centres, they do help all industries, at times, even those that are a growth pole. While it is not the specific aim of government to necessarily help growth pole industries, i.e.

those industries already growing, it is normal for them to offer assistance to an industry which can effectively create new jobs. As Perroux notes, external economies are created when a new innovative company is introduced into the economic structure of a country's manufacturing base. These external economies are important manifestations in the potential for growth.[1] This multiplier effect pervades throughout the economy, influencing and helping to create new jobs in other segments of the business community.

Perroux, on several occasions, directs his remarks to the impact that government can have upon an economy. For example, he says, "... public agencies and their initiatives cannot be forgotten, ..."[2] and, "... State encouragement through, for example, [illegible]sidy."[3] In speaking of the forces which cause industry to expand and grow, part of the success is derived from the influences which governments exert. In this regard he makes the following statements, "... a State which, through its purchases as well as by regulation, exerts an influence ... on ... industries."[4] and, "... the plans of the large units and their groups co-ordinated and regulated by the State act on prices, sales and purchases of inputs. It is the result of these forces which provoke the expansion and growth of impelled industry."[5] Also, in speaking about the national economy, he states,

> "It appears now as a combination of relatively active groups (propellent industries, geographically concentrated poles of industry and activity) and relatively passive groups (impelled industries, regions dependent on geographically concentrated poles). The former induce into the other the phenomena of growth."[6]

These quotes are introduced to show that the State or Government can have a definite impact upon industry and consequently, the overall economy. The reason for wanting controls is made evident by Perroux as he proposes.

> "There is ... a conflict between the economic regions of the large economic units (firms, industries, poles) and the politically organized regions of the national states. The first do not coincide with the second; their growth depends on ... markets, outside the national territory. Now these great economic units are the instruments of prosperity and weapons of strength of the state."[7]

He goes on to say that, "Each state tries to exploit... the poles under its control within its own territory ..."[8]

Within the Canadian economy, in particular the region of Southern Ontario, government intervention can be seen from a perspective of the contribution, (usually financial assistance), it has made to businesses. While Perroux, in the preceeding quotes, has used words such as, 'encouragement', 'initiatives', and 'subsidy' to describe the interaction of government with industry, the most crucial phrase is 'weapons of strength of the state'. Through the expansion of industry new sources of revenue, in the form of taxes, are created. The output of these industries is

added to total output and show up in GNP. Therefore, it is of utmost significance for government to strengthen the country's economic foundation.

## The Ontario Setting

The Government of Ontario, through the auspices of the Ontario Development Corporations (ODC), (NODC), and (EODC), provides financial assistance to businesses. Their intent is to promote new employment opportunities. For purposes of efficiency and visability the ODC is divided into three regional areas. These areas are; (a) Northern, (b) Eastern, and (c) Southern and Central.

> "The three developmental corporations serve the financial needs of Ontario's small business community, each bringing its own perspective of the distinctive socio-economic character of the region. The corporations play an important role in providing and assisting industrial growth in the less developed parts of the province."[9]

How important the development corporations have been can be seen from Table 7-1. The $12.8 million in loans to Northern and Eastern Ontario went to regions which, "... represent 26 per cent of Ontario's population, [but] generate only about 14 per cent of the province's value of shipments of manufactured goods."[10] Also, "Overall, corporation assistance in 1979/80 is expected to result in the creation of 1,300 new jobs in small businesses in Northern and Eastern Ontario."[11]

In light of the above, the functional role of the

corporations policy to," .... play an important role in providing and assisting industrial growth in the less developed parts of the province,"[12] would appear to be satisfied.

New Job Assistance

Table 7-1 illustrates the number of loans for the 1979/80 period. The interesting thing about these loans is that, in value, almost fifty per cent were given out in the Southern and Central region. This region would hardly qualify as a 'less developed' part of the province; hence, it seems that the loans could be viewed as an economic aid in helping to create more jobs in the more developed region. Table 7-2 shows the number of jobs which the ODC estimates will be created as a result of these loans. For 1980, the table indicates that twenty-eight new jobs will be created, on average, per loan and that each job so created cost $4100, on average.

In Table 7-3 the loans to industries that make up the Plastics Industry are shown. These are the total loans to this industry since the start of the program in 1967. Table 7-4 breaks down these loans on a per cent basis for clarity. From these tables it can be seen that of some one hundred and eighty-eight loans, 23.9 per cent went to the Metro Toronto area and 21.8 per cent to the region

TABLE 7-1

DISTRIBUTION OF TERM LOANS BY REGION 1979/80

| Loans | Northern | Eastern | Southern & Central | Total | Southern & Central as Per Cent of Total |
|---|---|---|---|---|---|
| Number of Loans | 74 | 51 | 105 | 230 | 45.7 |
| Value of Loans $(000,000) | 6.1 | 6.7 | 12.7 | 25.5 | 49.8 |
| Average Value of Loan $(000) | 82.4 | 131.4 | 121.9 | 110.9 | -- |

Source: Ontario Development Corporations Annual Report 1979/80. p.7.

TABLE 7-2

NEW JOBS ASSISTED BY CORPORATIONS FINANCING

(EXCLUDING EXPORT LOANS)

| Year Ended | Number of Loans | Amount $(000) | Estimated New Jobs Within 5 Years | Average Number of New Jobs per Loans | Average Amount of Loan per New Job $(000) |
|---|---|---|---|---|---|
| 1976 | 240 | 22,190 | 2,731 | 11.4 | 8.1 |
| 1977 | 255 | 38,489 | 5,311 | 20.8 | 7.2 |
| 1978 | 398 | 53,767 | 7,103 | 17.8 | 7.6 |
| 1979 | 326 | 64,400 | 13,548 | 41.5 | 4.8 |
| 1980 | 296 | 34,377 | 8,281 | 28.0 | 4.1 |

Source: Ontario Development Corporation Annual Report 1979/80. p.7.

The total for 1980 does not agree with that given in Table 7-1 due to the fact that these figures were obtained from sources having different fiscal reporting periods.

TABLE 7-3

DISTRIBUTION OF ODC LOANS TO PLASTICS COMPANIES 1967-1982

| Range of Loans | Metro Toronto | Within 25 Miles of Metro | North | East | West | Total |
|---|---|---|---|---|---|---|
| To $100,000 | 22 | 22 | 10 | 2 | 36 | 92 |
| $100,001 to $250,000 | 13 | 14 | 10 | 1 | 26 | 64 |
| Over $250,000 | 10 | 5 | 3 | 1 | 13 | 32 |
| Total | 45 | 41 | 23 | 4 | 75 | 188 |

Source: Unpublished Ontario Development Corporations material, supplied by Mr. D.M. Goodyear, ODC.

TABLE 7-4

DISTRIBUTION OF ODC LOANS IN THE SOUTHERN AND CENTRAL REGION

PER CENT

| Range of Loans | Metro Toronto | Within 25 Miles of Metro | North | East | West | Total |
|---|---|---|---|---|---|---|
| To $100,000 | 23.9 | 23.9 | 10.9 | 2.2 | 39.1 | 100.0 |
| $100,001 to $250,000 | 20.3 | 21.9 | 15.6 | 1.6 | 40.6 | 100.0 |
| Over $250,000 | 31.2 | 15.6 | 9.4 | 3.1 | 40.7 | 100.0 |
| Total | 23.9 | 21.8 | 12.2 | 2.1 | 40.0 | 100.0 |

Source: Developed from Table 7-3.

within 25 miles of Toronto. This gives a combined total of 54.7 per cent. Similarly, 40 per cent of the loans were given to the Western part of the Southern and Central region. These loans are mapped on Figure 7-1 for easy reference. Table 7-5 shows the dollar value of loans to the Plastics Industry for the years 1979 to 1982. Table 7-6 has been introduced to give consolidation of these loans for 1979 with 1980, and 1981 with 1982, along with the per cent change that has taken place between these time periods. Table 7-6 indicates that an escalation in loans has taken place between these time periods. The most noticeable change has been an added emphasis to regions other than within, or around, Metro Toronto. This is significant from at least one standpoint - that of the potential for job creation in these other regions. By applying the average number of jobs created per loan, from Table 7-2, to the loans shown in Table 7-6, then Table 7-7 was developed. This table shows the impact upon the various regions in terms of job creating applicability.

The data shown in the tables that have been discussed so far, in this chapter, express quite emphatically that the total Plastics Industry does depend upon outside sources for funding; in this case the ODC.

While Table 7-4 indicates that the Metro region is still a growth centre, Table 7-6 would tend to suggest

TABLE 7-5

ODC LOANS TO THE PLASTICS INDUSTRY

$(000) AND PER CENT OF TOTAL

| Region | 1979 | 1980 | 1981 | 1982 |
|---|---|---|---|---|
| Metro Toronto | $205 | $345 | $1299 | $155 |
| Per Cent | 24.6 | 21.3 | 27.8 | 5.3 |
| Contiguous Zones | $450 | $743 | $422 | $875 |
| Per Cent | 54.0 | 45.9 | 9.0 | 29.9 |
| North & North-East | $ 13 | $149 | $644 | $1050 |
| Per Cent | 15.6 | 9.2 | 13.8 | 35.8 |
| East | $165 | -- | $1625 | -- |
| Per Cent | 19.8 | -- | 34.8 | -- |
| West & South-West | -- | $380 | $681 | $850 |
| Per Cent | -- | 23.6 | 14.6 | 29.0 |
| Total | $833 | $1617 | $4671 | $2830 |
| | 100% | 100% | 100% | 100% |

Source: Ontario Development Corporations, unpublished material. Supplied by Mr. D.M. Goodyear, Information Officer.

Figure 7-1

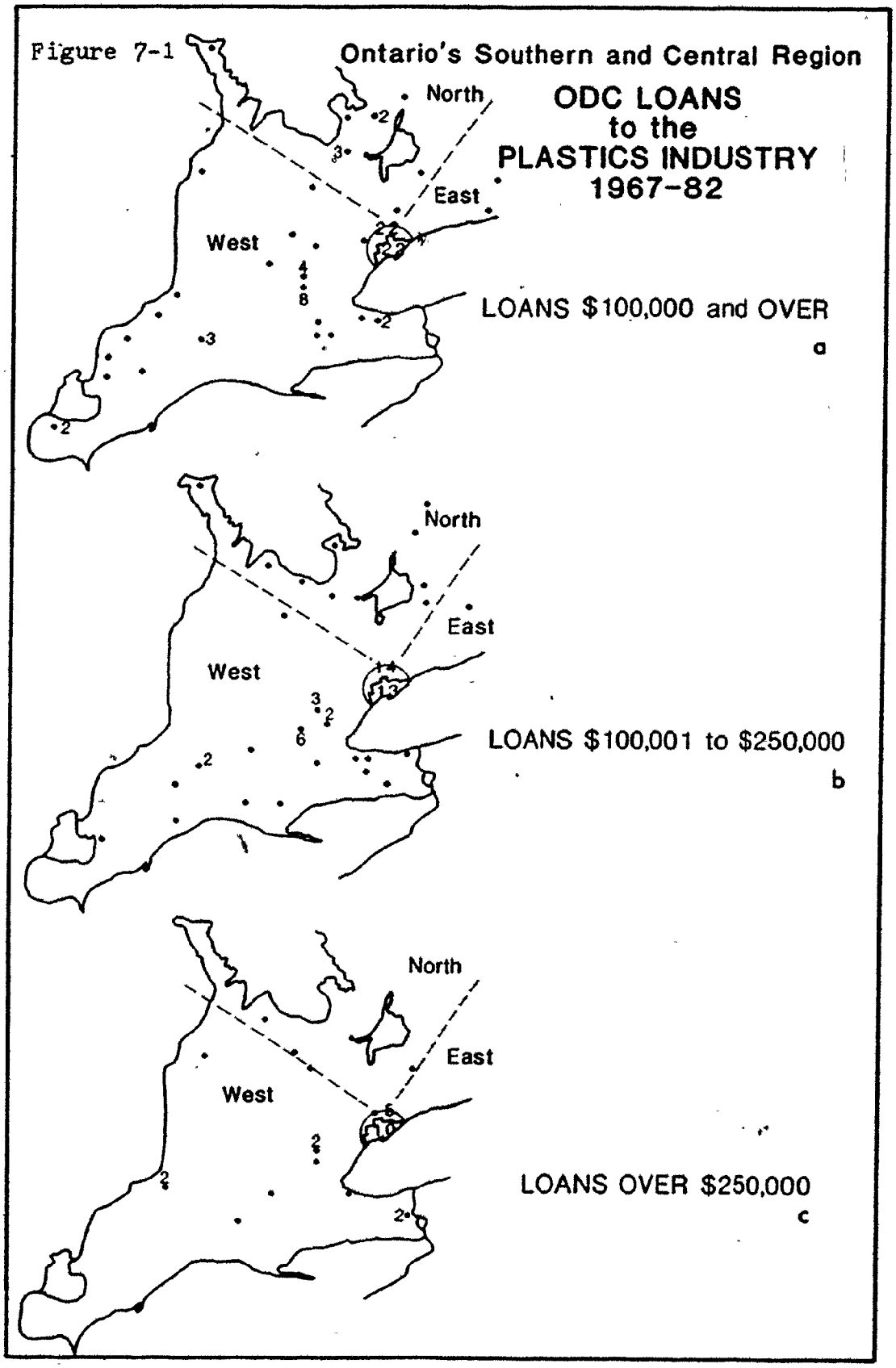
Ontario's Southern and Central Region
ODC LOANS
to the
PLASTICS INDUSTRY
1967-82
North
East
West
LOANS $100,000 and OVER
a
North
East
West
LOANS $100,001 to $250,000
b
North
East
West
LOANS OVER $250,000
c

TABLE 7-6

ODC LOANS TO THE PLASTICS INDUSTRY

$(000)

| Region | 1979/80 | 1981/82 | Per Cent Change |
|---|---|---|---|
| Metro Toronto | $ 550 | $1454 | 164.4 |
| Contiguous Zones | $1193 | $1297 | 8.7 |
| Sub Total | $1743 | $2751 | 57.8 |
| North & North-East | $ 162 | $1694 | 904.5 |
| East | $ 165 | $1625 | 884.8 |
| West & South-West | $ 380 | $1531 | 302.9 |
| Total | $2450 | $7601 | 210.2 |

Source: Consolidation from Table 7-5.

TABLE 7-7

JOB CREATION

| Region | 1979/80 | 1981/82 |
|---|---|---|
| Metro Toronto | 134 | 355 |
| Contiguous Zones | 291 | 316 |
| Sub Total | 425 | 671 |
| North & North-East | 40 | 413 |
| East | 40 | 396 |
| West & South-West | 93 | 373 |
| Total | 598 | 1853 |

Source: Calculated from the averages in Table 7-2.

that a shift in emphasis has taken place during 1981/82. The substantial increases in the value of loans to regions away from the Metro region imply that a secondary developmental process has begun. The point to be made here is that this is not an argument against Metro not functioning as a focal point for development but rather to underline the fact that a movement away from the centre has been perceived. This movement conforms to Perroux's concept of an established pole spreading its impact into the peripheries.

The question might be raised at this point as to whether or not this involvement, or interference, by government in economic spheres, through the sanctioning of loans to industry, actually leads to only a redistribution of companies from the centre to the periphery, thereby not adding to actual overall output: or are these industries additive, in the sense that they contribute increased output to the economy? In terms of the Profile Industry the answer would have to be that they add to overall output and are a positive contributor to the economy. As most of these firms are small in size, it would be to their disadvantage to split their resource base into more than one place. Also, the magnitude of the Canadian market is too small to attract new ventures, dealing in standard products, to it. The success of new ventures lies in the

optimizing of equipment, in the processing of innovative products and selling a large share of these products to export markets. This industry has demonstrated that the export market is a profitable area in which to conduct the search for expanded sales, thereby decreasing its dependence upon the Canadian market as the only avenue for sales.

If the ODC's predictions regarding the increase in new jobs is reasonably accurate then this industry has shown that it has a lot to contribute to the Canadian economic outlook.

Economic Horizons

Perroux claims that the complex industrial pole, as, "... a centre of accumulation and concentration of human and capital resources itself, gives birth to other centres..."[13] "When two of these centres are put into communication with each other... wide changes show themselves in the economic horizons and plans of producers and consumers."[14] Perhpas a short discussion as to what Perroux was driving at in these quotes is in order. Basically, he is promoting his original thought that "... growth does not appear everywhere at the same time, it manifests itself in points or 'poles' of growth, ..."[15] Growth occurs through the interaction of growth centres. A centre can grow because of some special feature, or it

can remain stagnant. Where a growth pole exists it provides the impetus for innovative processes and ideas to reach out or spread to other centres. The result is the establishment of a symbiotic relationship which raises the productive levels of both centres. In other words, the 'economic horizons' of both centres are expanded.

In looking at the key centres within Southern Ontario it is interesting to note that some fifty-five per cent of all Ontarians live within seven key centres. These are shown in Table 7-8. Each of these key centres owes its raison d'etre to some historical developmental process, which for purposes of this research is unimportant. What is pertinent is the fact that within a Canadian setting these centres have grown rapidly since the turn of the century and could, for all intent and purpose, qualify as growth centres or poles of development. As an example of this, the historical development of Hamilton as a centre for iron and steel production can be viewed as a growth pole. In terms of an 'economic horizon' this industry acts and interrelates with other centres within the domestic economy and abroad.

In terms of the Custom Profile Extrusion Industry, growth poles are evident, by association, with the following regions. Within the Metropolitan Toronto region there are ten companies; the contiguous regions of Mississauga,

TABLE 7-8

ONTARIO'S GROWTH CENTRES

| Key Centres | Population (000) | Per Cent of Centres | Per Cent Ontario | Per Cent Canada |
|---|---|---|---|---|
| Metro Toronto | 2914 | 61.8 | 33.9 | 12.1 |
| Hamilton | 536 | 11.3 | 6.2 | 2.2 |
| St. Catharines-Niagara | 310 | 6.6 | 3.6 | 1.3 |
| Kitchener | 288 | 6.1 | 3.4 | 1.2 |
| London | 280 | 5.9 | 3.3 | 1.2 |
| Windsor | 246 | 5.2 | 2.9 | 1.0 |
| Oshawa | 145 | 3.1 | 1.7 | 0.6 |
| Total of Centres | 4719 | 100.0 | 55.0 | 19.6 |
| Total Ontario | 8587 | -- | -- | 35.8 |
| Total Canada | 24,010 | -- | -- | -- |

Source: Stats & Facts, Ministry of Industry and Tourism, p. 1.

Brampton and Concord have nine, five and three companies, respectively. The total contiguous region consists of a total of seventeen companies. The hinterland regions have thirteen companies located within them. (For further references to actual sites the reader can see Appendix F). The towns or cities within the hinterland regions, could not, at this time, be classified as growth poles as their input to the total is not significant enough. However, as has been alluded to earlier in this chapter, the future growth of this industry may well spread into these hinterland regions, if the influence of government funding overrides other considerations. Now might be an appropriate moment to review in more depth what the impact or direction of the loans from ODC has had, or is having, upon the Plastics Industry.

Regional Loans From ODC

Since 1967, the first year for which data pertaining to the Plastics Industry is available, over eighteen million dollars has been loaned by the ODC to this industry. By breaking down these loans into a regional pattern, some idea as to the 'spread effect'[16] can be gathered. Table 7-9 details these findings. The distribution pattern of these loans illustrates quite clearly that a transition away from the centre has taken place. Or, another way of looking at this would be to say that, governmental em-

TABLE 7-9

ODC LOANS TO THE PLASTICS INDUSTRY: 1967 - 1982

$(000)

| Region | ODC $ Loans | Per Cent |
|---|---|---|
| Metro Toronto | 1636 | 8.9 |
| Contiguous Zones | 3772 | 20.4 |
| Northern Region | 1474 | 8.0 |
| Eastern & North-Eastern | 5795 | 31.4 |
| Western Region | 5198 | 28.2 |
| Not Defined | 589 | 3.1 |
| Total | 18,464 | 100.0 |

Source: Ontario Development Corporations, unpublished material. Supplied by Mr. D.M. Goodyear, Information Officer.

phasis has been directed more towards the peripheral regions than the centre.

Of the total loans given to plastics companies within the contiguous regions, the centres of Brampton, Concord, and Mississauga accounted for 86.4 per cent. In the Eastern and North-Eastern regions, Coburg, Trenton, Napanee, and Prescott accounted for 55.6 per cent of the loans. In the Western region, Bolton, Hamilton-Burlington, Oakville, and Centralia received 51.2 per cent. While these are examples of specific centres that may qualify as growth poles, within the concept of the total Plastics Industry, it is felt, at the present time, that there is inadequate data available to arrive at this conclusion.

What is significant, however, is the fact that the Metro Toronto centre received only 8.9 per cent of the ODC loans. While expansion is obviously still in evidence within this growth centre, it is also clear that other regions have been receiving an impetus which could readily develop growth pole industries.

Summary

This chapter was concerned with looking at the impact upon this industry from a viewpoint that governmental assistance played a vital role in stimulating movement to contiguous or peripheral regions. In the broad sense,

this could be what Perroux meant when he said that, 'each state tries to exploit the poles under its control'. Whether the loans through ODC to industry could be termed 'exploitive' is difficult to ascertain. These loans, one would assume, are designed to stimulate economic activity within backward regions.

In the overall scenario of loans to manufacturing and small businesses, as found in Table 7-4, the Metro Toronto region and the contiguous zones account for 45.7 per cent of all loans. This indicates that a high degree of business activity is still taking place within these regions. This could also be seen as a process of solidifying the Metro region as a growth pole. However, in reviewing loans to the Plastics Industry, over a fifteen year period, the emphasis has not been as heavily directed towards the Metro Toronto region but has tended to take an East and West direction. Table 7-9 shows that of all loans to the Plastics Industry, 59.6 per cent have been given to regions outside of the Metro area.

The significance of this is that it gives credence to support the belief that a spreading out effect has taken place within the last decade and the Toronto area, per se, while it is not decreasing in terms of overall importance, is losing industry to peripheral locations.

One of the keys to success for economic prosperity is

the providing of jobs. This industry has demonstrated that, as a growth industry, it has the capacity to create new jobs. The question of how many jobs and where they might occur is of vital interest to the public, in general. The Plastics Industry, as a growth industry, can provide necessary jobs for the future. Also, as most companies, newly formed, do not immediately have a full complement of staff, the possibilities of this 'future' stretch over several years. The fact, too, that this industry is not dominated by what happens within domestic market, as it depends to a large degree upon export orders, makes it perhaps a more stable industry and hence more attractive for employees.

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12. Ibid.
13. Perroux, op. cit., p. 185.
14. Ibid.
15. Ibid., p. 182.
16. Myrdal, G. (1957), Economic Theory and Underdeveloped Regions. London: Duckworth, pp. 27-33.


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# CHAPTER VIII

# CONCLUSION

## Synopsis

The preceeding chapters have been concerned with an investigation of the salient characteristics of a growth pole, as proposed by F. Perroux's theory, and their relationship to the Custom Profile Extrusion Industry. These characteristics are embodied in discussions relating to:

- the role of innovations.
- the rate of industry growth.
- linkages to other industries.
- the role of a motor industry.
- the role of a key industry.
- centripetal and centrifugal forces.

The research was concerned with looking at these characteristics and their specific relationship to the Custom Profile Extrusion Industry to determine whether or not this industry qualified as a growth pole industry.

## The Approach

At the onset, six hypotheses were proposed. They were;

1. The growth structure of the Plastics Industry over the past decade has been rapid in nature and as such qualifies as a motor or propulsive industry.

2. Centripetal forces have been a deciding factor in contributing to the early settlement patterns of the industry within the Metopolitan Toronto area.

3. Centrifugal forces within the economic environment of the growth centre have pressured a peripheral expansion of this industry.

4. The nature of the product life cycle impacts both upon the growth pole and the growth centre.

5. The success to date of this industry has been achieved through offering innovative products into the marketplace.

6. Government aid has been a force that has propelled some industry members to peripheral locations.

Empirical Investigation and Findings

To show the relevancy of the hypotheses, they will be dealt with, in turn, to see what empricial evidence was provided to substantiate each hypothesis.

1. Evidence of the total growth of the Plastics Industry, on a world scale, can be seen from Table 1-1. Canada's consumption of PVC, with an average annual growth rate of 9.0 per cent, from 1978 and projected to 1983, surpasses the U.S.A., Western Europe and Japan. Also, projected demand for PVC in Canada, as seen in Table 1-2, has risen from 357 million pounds to a projected 549 million pounds in 1983; or an increase in the order of 192 million pounds.

The total PVC market in Canada, in respect to the production of finished products, is expected to increase from 357 million pounds in 1978 to 652 million pounds in 1985, an increase of some 295 million pounds; or, between 1983 and 1985, an increase of 109 million pounds. These figures are detailed in Table 1-3. In Chapter 4, Table 4-1, the number of companies that represent the Plastics Industry is shown. Of the total 1,287 such companies, 775 or 70.6 per cent of the total are found in the province of Ontario. As Table 4-2 illustrates, across Canada some 73,554 workers are employed in this industry, with the greatest majority, 51,965 workers or 70.6 per cent, employed in Ontario.

For growth, in terms of dollars of sales, Table 4-6 ilustrates the strides made in this industry from 1971, where sales were $1.2 billion, to 1980 where sales had risen to $5.0 billion. Within Chapter IV, Table 4-7 and 4-8 show the growth in market share of the industry in relationship to Gross Domestic Product. As one example of what is contained within these Tables, for 1980 the Plastics Fabricating Industry had achieved a 19.4 per cent share of the Non-Durable Goods Industries. This was an increase from 14.9 per cent in 1975.

For the Profile Industry, Table 5-5 shows the outlook for growth. These projections clearly suggest that future

growth will be rapid, falling within a nine and a twelve per cent range. These empirical examples illustrate the growth characteristics of this industry sector, and demonstrate that annual growth has taken place at a faster rate than that of the national economy.

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2. That centripetal forces have contributed to the settlement patterns of this industry within the Metro area can be seen from the following empirical evidences. The discussion within Chapter V indicate that this industry requires a high degree of technical expertise, both in terms of men and machines. From discussions with several industry members it was discovered that many of the founders of this industry were of European origin. The attractiveness of Metro Toronto, for whatever personal reasons, became their focal point for settlement. The firms which these individuals founded had their roots within the Metro Toronto region.

As these companies were being established the need for support services was also developing. The Metro region became a focal point for these supportive industries. Table 4-4 gives evidence of three selected industries which, basically, rely on the Plastics Industry for their raison d'etre. For example, of the Materials and Suppliers Industry, 74.7 per cent of all these industries are

located within Ontario. Within Ontario, 77.2 per cent of these companies are located within a 25 mile radius of Metro Toronto. This shows that a high degree of linkage takes place between the subject industry and the supply industries. The linkages have important consequences in relationship to external economies.

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3. That centrifugal forces are at play in the process of decentralization of this industry are seen from these empirical observations. One of the basic forces at work is seen in the maturing process of this industry and the products that it produces for sale. While many products could be called innovative, for example, window components, as they become standard production items the same need for highly skilled workers to develop and produce these items no longer exists, or exists to a lesser degree. The manufacturer can only increase, or maintain, his profit line if subsequent costly overheads are reduced. In the evidence concerning high tax rates, introduced in Chapter V, as well as increasing realty costs, plus the perception by the industry members that future expansion of the industry is more likely to occur outside of the Metro region, all combine to show that forces are at work which eventually will move this industry away from the growth centre. The point here is that it is not any

single force which will promote this decentralization movement but rather that a combination of many underlying factors, in concert with each other, will cause this decentralization process to occur.

Other forces, or factors, also play an important role in this decentralization process. In Chapter IV it was noted that The Steering Committee on Economic Development perceived five causal factors which were in evidence as forces which were impacting upon the Metro core region. Their analysis determined that future manufacturing growth would take place within regions outside of the Metro area. This industry's attractiveness, as indicated in Chapter IV, Table 4-9 and Figure 4-1, where growth was shown to be at a faster rate than GNP and pricing was seen to be competitive with primary materials, makes it a target for others wanting to get into this business. Also, the fact that many of the products that are manufactured within the industry are direct replacements for primary products affords the entrepreneur the opportunity to select a possible item, or a series of such items, where through the technology inherent within the PVC process he will be able to produce an equivalent product using PVC.

Finally, some of the responses to the questionnaire indicated that the uniqueness of this group of industries, in itself, helps to account for a possible decentraliza-

tion process. For example, question 19 showed that a high degree of research and development is done by these companies. They do not have to rely upon outside sources to any large degree. Question 18 also shows a certain independence, insofar as prices are concerned, as rising energy prices have, in fact, made this industry more competitive than their competition. These two factors would then allow a freedom of movement to other locations. However, as this industry is still more or less in the development stages it is difficult to perceive any definite series of actions which will occur all at one moment in time. The more likely scenario is that decentralization will take place, slowly, over time.

---

4. The product life cycle has differing impacts upon the growth pole and the growth centre. For the growth pole it centres around the need to maintain a viable base of products, innovative in nature, which will allow it to grow as an industry. Because this industry is so young, in terms of time, the growth of the industry is still taking place. The innovative products which have come into being, such as eavestroughing, windows and siding, have passed the development stage. These are now accepted consumer products. Their growth occurs as either in new housing projects or as replacement parts when remodelling

or renovating. The total scope of this market is very difficult to ascertain as consumer preferences, pricing and availability of product all come into play. For the industry, while a majority still rely on these products to maintain their firm, new products will have to be introduced if they are to maintain the driving force which they have demonstrated to date. The other side of the coin is that they will have to reduce costs to maintain the required profit levels. To do this they may have to search for new, less expensive locations. As has already been shown in Chapter V, Table 5-19, the realty taxes, for example, decrease with outward distance from the Metro core. This would be only one factor that would have to be taken into consideration if a plant is to move. If a plant does elect to move, then the consequences to the region which it is leaving are noticeable. The discussion regarding the impact upon the Metro core, in Chapter IV, gives evidence of this. While the centre has, over time, been a force that has attracted industry to it because of a more sophisticated infrastructure, more customers, and closeness to competitors and suppliers, the opposite effect will take place as an industry, or a set of industries, decides to move to more peripheral locations.

As the PVC industry demonstrates a more mature phase, then, no doubt, more of an exodus will be evident. The

core regions will then have to change their direction from that of a manufacturing entity to more of a service base. This was the findings of the Economic Development Committee.

---

5. The success of this industry, due to its offering of innovative products, has been extremely rapid. The growth has been examined throughout this paper, demonstrating that this industry has achieved a niche for itself in the Canadian marketplace. Examples of their growth have been introduced and discussed in Chapter III, Tables 3-5, 3-6, and 3-9, and Chapter IV, Table 4-5.

The success of the Profile Industry has, to a large extent, been achieved due to the acceptability by industry and consumer alike of their light-weight and durable product offerings. The versatility of colour and design potential makes this (PVC) an easy product to work with, hence the scope of new product offerings in the future is virtually unlimited.

---

6. Government aid has been responsible for propelling some industry to peripheral locations. The role of the various governments, federal and provincial, is to help in the bringing of industry to regions that appear to be underdeveloped.

In Chapter VII evidence was presented which showed the involvement of the Ontario Development Corporations in loaning monies to the Plastics Industries. That these loans do create jobs is seen from Tables 7-2 and 7-7. From Figure 7-1 the areal distribution of these loans is apparent. Table 7-3 shows the ranges of loans, while Table 7-4 shows their distribution within the Southern and Central region. Table 7-6 clearly indicates that, on a per cent basis, the thrust in the granting of loans has shifted away from the Metro region. For 1981/82 it is clear that a new emphasis has taken place in the direction of the loans. Table 7-9, which shows total ODC loans to the Plastics Industry from 1967 to 1982, illustrates the peripheral nature of these total loans through time. There has been a definite shift away from the Metro region, although this fact does not detract from the Metro region as still functioning as a growth centre.

The distribution of the Custom Profile Extrusion Industries, in Appendix F, shows the settlement pattern of this industry in 1980. While the results are inconclusive, inasmuch as it cannot be said that these firms are located where they are because of government intervention it does appear that the centres of Mississauga, Brampton, and Concord have arisen as dominating centres within the growth pole context. It is expected that future growth

will take place in a more Westerly direction as government seeks in helping this industry to expand. This expansion will probably follow a natural directional flow along Highway 401. This highway is, basically, the link which joins the other centres of growth in Southern Ontario, as detailed in Table 7-8.

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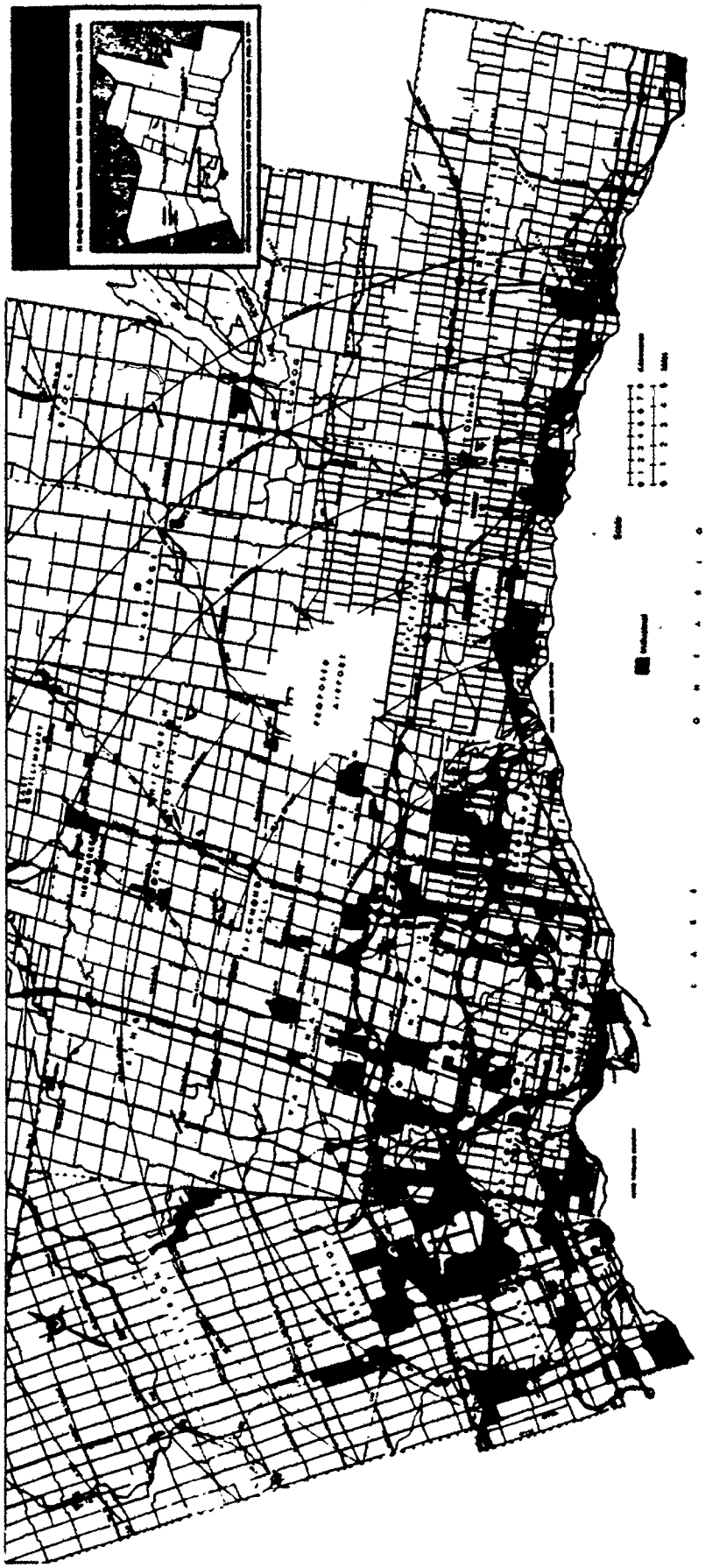
This treatise has been directed to an examination of the Custom Profile Extrusion Industry to show how it exemplifies those characteristics which are necessary in order for it to qualify as a growth pole industry.

The subsequent identification and evaluation of six hypotheses, concerned with an assessment of the attributes and characteristics of this industry, was offered as a methodology by which a growth pole industry could be evaluated within the bounds of Perroux's theory.

# APPENDIX

INDUSTRIAL SITES



## APPENDIX B

### RESEARCH AND DEVELOPMENT, FEDERAL SOURCES OF GOVERNMENT GRANTS AND ASSISTANCE

| Program | Eligibility | Projects | Project Duration | Forms of Financial Assistance |
|---|---|---|---|---|
| Industrial Research Assistance Program (IRAP) | - Canadian corporations<br>- Other groups such as trade associations, co-operatives, consulting firms, engineering, firms<br>- All employing scientific and technical staff. | - Applied research<br>- Scientifically feasible<br>- Commercially realistic | 2 to 3 years | - Covers salaries and fringe benefits of scientific and technical staff<br>- On special basis, participation of some consultants |
| | - Canadian Corporations employing undergraduate students | - Production and manufacturing problems of small firms; product design; quality control; plant layout | N/A | - Covers salaries of university and technical college students |
| | - Canadian corporations<br>- Less than 200 employees | - Problem solving investigations with research laboratories institutes, or consultants | 3 projects per year | - Maximum limit per project is $6,000<br>- Reimbursement of 75% of authorized total cost of project on receipt of paid-up invoices |
| Mini Industrial Research Assistance Program (Mini-IRAP) | - Canadian corporations<br>- Less than 200 employees<br>- Manufacturers | - Applied research and development<br>- Can be sub-contracted to co-operating research organization, e.g. university, industrial, research laboratory or consulting firm | Maximum 12 months | - Covers salaries and fringe benefits of professional and technical staff including those under sub-contracts<br>- Maximum limit of $30,000 |

Federal Programs Continued

| Program | Eligibility | Projects | Project Duration | Forms of Financial Assistance |
|---|---|---|---|---|
| Enterprise Development Program (EDP) | - Small and medium firms<br>- Manufacturing and processing<br>- Must be viable<br>- Must be significant financial burden on firm | - Innovation projects<br>- New and improved products, processes or services capability | N/A | - Cost sharing grants<br>- If sales level exceeds $10 million, up to 50% grant<br>- If sales below $10 million, up to 75% grant. |
| | | - Product design<br>- Durable products<br>- Mass production | N/A | - 50% to 75% as above (capital costs excluded) |
| | | - Identify new products<br>- Research of product user requirements<br>- Market testing | N/A | - 50% to 75% as above<br>- Maximum $100,000<br>- 5% royalty repayable of any export sale up to original grant, maximum 5 years |
| | | - Productivity improvement<br>- Adapt technology to applicant's premises | | - 50% to 75% as above<br>- maximum $100,000 |
| Defense Industry Program (DIP) | - Canadian defense industry<br>- Manufacturers, users of advanced engineering or technology fro defense exports<br>- Sub-contractors | - Product research<br>- Development<br>- Testing and Evaluation<br>- Manufacture of prototypes and sample batches | N/A | - Capital loans for equipment<br>- Program pays 100% of costs<br>- Company repays 5-% over 5 years at no interest<br>- Development of exportable products<br>- 50% of total costs |
| Industrial Energy Research & Development Program (IERD) | - Any Canadian company consulting firm or trade and research association | - Research and development of new and improved processes and equipment to reduce energy consumption in industry | N/A | - Contributions of up to 50% of total estimated costs of approved projects |

## Federal Programs Continued

| Program | Eligibility | Projects | Project Duration | Forms of Financial Assistance |
|---|---|---|---|---|
| Development & Demonstration of Resource & Energy Conservation Technology Program (DRECT) | - Any business | - Develop equipment, systems or products for energy and resource recovery | N/A | |
| Energy from the Forest Program (ENFOR) | - Canadian business | - Research and development to increase business yields, provide new processes for energy products | N/A | - Normally 100% of costs of approved research and development costs |
| Federal/ Provincial Demonstration of Conservation and Renewable Energy Program | - Technical competence to design, build, operate and monitor demonstration facility | - New technology and applications which exploit renewable energy resources, conserve energy or make its use more effective | N/A | - Contributions up to 2/3 of funds required |
| Product Development Management Program (PDMP) | - Some firms which may not be eligible for direct EDP assistance (see EDP) | - Product Development | N/A | - Federal and Provincial contributions between 75% and 90% of project costs<br>- Funding provided only through provincial research organizations<br>- Maximum of $20,000 per project in Ontario |
| Program for Industry/ Laboratory Projects (PILP) | - Companies that can manage the commercialization process and have good marketing capabilities | - Application and use of scientific and engineering knowledge | N/A | - Contracts and/or contributions<br>- Funding negotiable up to 100% of costs |

Federal Program Continued

| Program | Eligibility | Projects | Project Duration | Forms of Financial Assistance |
|---|---|---|---|---|
| Project Research Applicable in Industry (PRAI) | - Member of academic staff of Canadian University<br>- Project must be in collaboration with a Canadian company | - New research advances with high probability of commercial benefit | - Up to 5 years | - Grant for salaries of research staff and cost of materials, supplies, etc. |
| New Technology Employment Program (NTEP) | - Firms with less than 300 employees<br>- Proprietorships<br>- Associations<br>- Employees must meet certain criteria | - Research and development in manufacturing, product and process development<br>- Small scale energy conservation | - Creates at least one full-time job for a minimum of 8 weeks | - 75% of wages of each eligible employee<br>- Maximum $290 per week<br>- Maximum of 12 months<br>- Maximum per employer is $150,000 |
| Unsolicited Proposals Program for Research and | - Any Canadian firm<br>- Project must be supported by government department within its science mission<br>- Projects must have scientific merit and be technically feasible<br>- Projects must be sufficiently unique re novelty of the idea or capacity of proposer | | N/A | - 100% of costs |
| Waste Recyling and Recovery Program | - Any Canadian company or individual | - Research and development re recycling and recovery waste | N/A | - Contracts on approved projects in co-operation with provinces and the private sector |

## RESEARCH AND DEVELOPMENT, PROVINCIAL SOURCES OF GOVERNMENT GRANTS AND ASSISTANCE

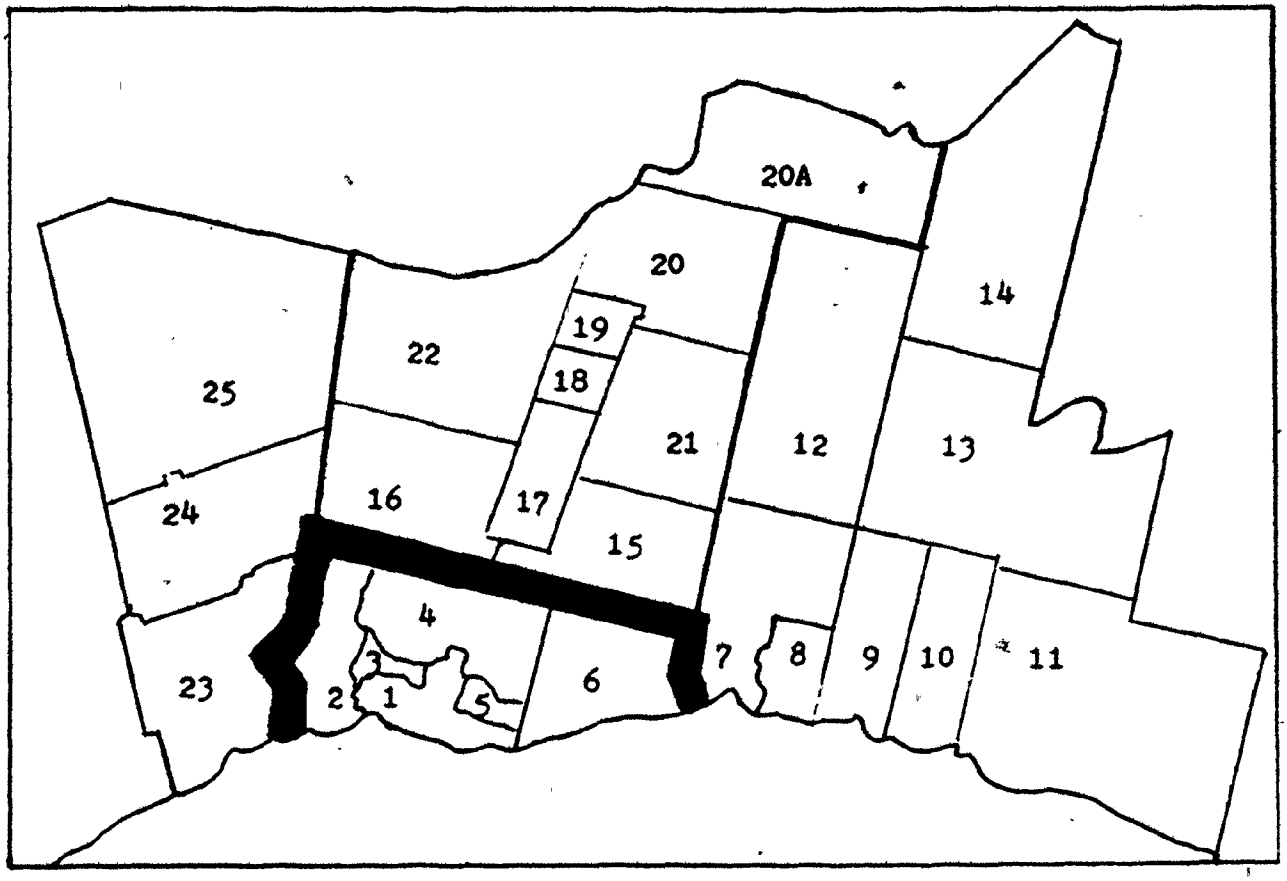
| Program | Eligibility | Projects | Forms of Financial Assistance |
|---|---|---|---|
| British Columbia Product Development Program (PDMP) | - Taxable Canadian manufacturing corporation located in B.C. | | - 75% to 90% of total eligible costs<br>- Maximum $25,000 per project |
| Albert Product Design and Market Program | - Companies registered in Alberta<br>- Companies manufacturing in Alberta | - Product design | - Up to 70% of eligible design costs |
| Alberta Product Development Program | - Companies registered and manufacturing in Alberta | - Product development | - Up to 75% of eligible costs |
| Alberta Opportunity Company | - Canadian business or co-operative in Alberta<br>- Assistance will be utilized only in Alberta | - Research and development | - Capital loan with maximum 15 year term<br>- Working capital loan<br>- Loan guarantee |
| Saskatchewan Product Development Program Centre | - Manufacturing and processing companies in Saskatchewan | - Development new products<br>- Modify/improve existing products<br>- Developing special processes<br>- Product test | - Grants up to 50% of costs<br>- Maximum $10,000 |
| Manitoba Product Research and Design Program | - Small and medium sized manufacturers in Manitoba | - Improve or develop products | - Maximum budget of $25,000 per project<br>- 30% to 50% of consultant's fees covered |

Provincial Programs continued

| Program | Eligibility | Projects | Forms of Financial Assistance |
|---|---|---|---|
| Ontario Program to Encourage Products and Process Innovation (PEPPI) | - Manufacturers and small business without own development facilities located in Ontario | - Develop prototype or new process | - 100% of eligible costs<br>- Maximum $10,000 per project |
| Quebec Program Innovation | - Manufacturing business employing less than 500<br>- In operation for at least 3 years<br>- At least 10% of sales are outside Quebec | - Research and development<br>- Manufacturing prototypes<br>- Modernization of manufacturing process | - Interest-free loan for first two years and 10% interest loan for following years<br>- If project fails, loan could become forgiveable<br>- Total loan up to 50% of allowable expenses<br>- Maximum $50,000 |
| Nova Scotia Market Development Centre | | - Product design<br>- Prototype | - Grants up to 75% of design fee, max. $15,000<br>- Grant up to 75% of labour and materials |
| Newfoundland and Labrador Market and Product Development (MAPD) | - Existing businesses in Newfoundland and Labrador<br>- Manufacturers and processors | - Research and development of new products<br>- Modification of existing products | - Grants up to 50% of total cost. Maximum $50,000 |

## APPENDIX C

## REGIONAL TORONTO



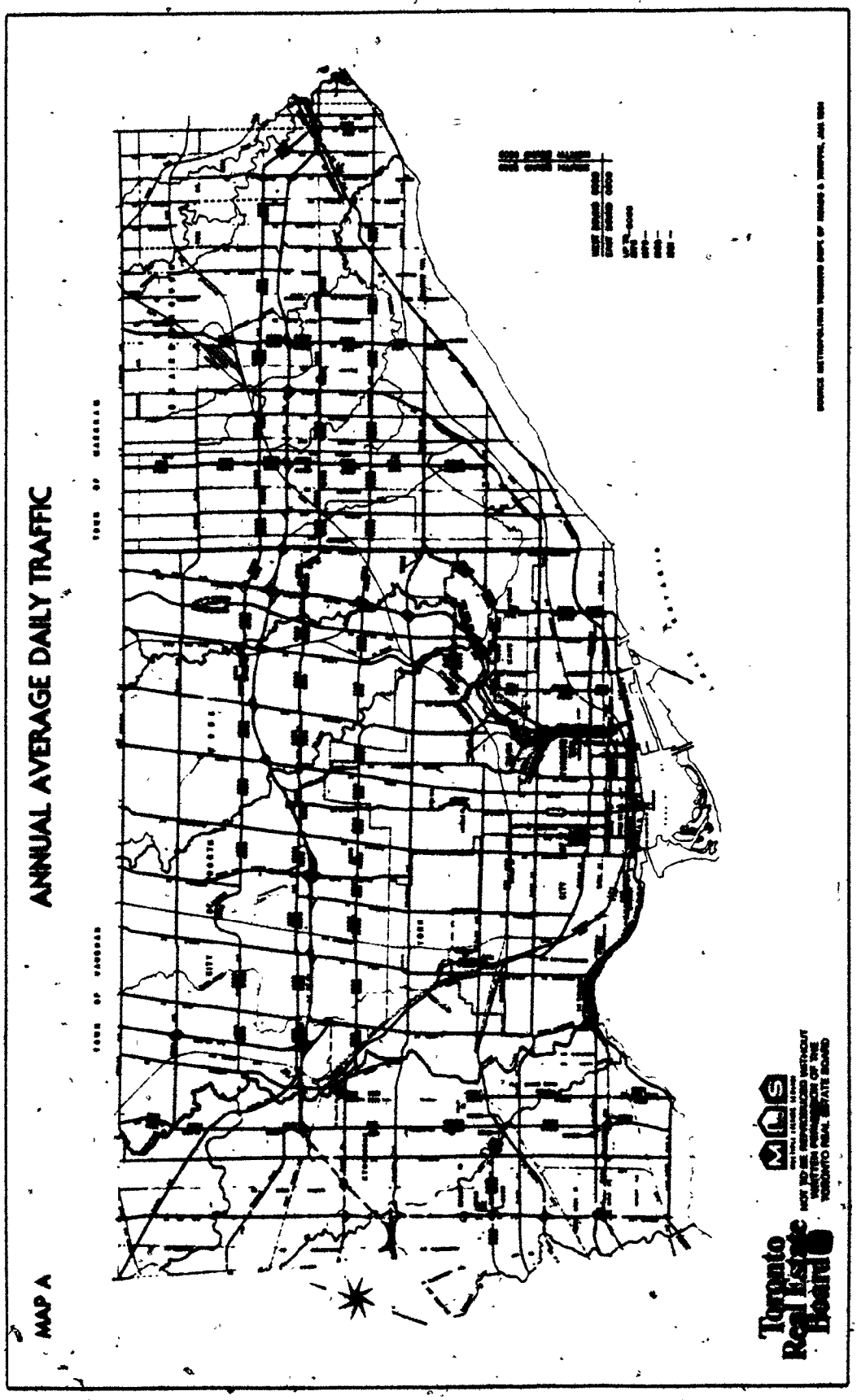

**Metropolitan Toronto**
1. City of Toronto
2. Etobicoke
3. York
4. North York
5. East York
6. Scarborough

**Region of Durham**
7. Pickering
8. Ajax
9. Whitby
10. Oshawa
11. Newcastle
12. Uxbridge Twp.
13. Scugog Twp.
14. Brock Twp.

**Region of York**
15. Markham
16. Vaughan
17. Richmond Hill
18. Aurora
19. Newmarket
20. East Gwillimsbury Twp.
21. Whitchurch-Stouffville
22. King Twp.
20A. Georgina Twp.

**Region of Peel**
23. Mississauga
24. Brampton
25. Caledon

APPENDIX D


ANNUAL AVERAGE DAILY TRAFFIC
MAP A
Toronto Real Estate Board
MLS

# APPENDIX E

## PLASTIC PROFILE EXTRUSION EXTRUSION INDUSTRY MEMBERS

### Hinterland Regions

| | |
|---|---|
| *Crila Plastics | Bolton |
| *Mac Tac Can. Ltd. | Mt. Forest |
| *Building Products | Acton |
| *Extrusion Plastics | Markham |
| *Micro Plastics Ltd. | Guelph |
| Provincial Plastics | Cambridge |
| *Plastoflex Ind. | Rockwood |
| *Quality Plastics | Oakville |
| Trident Ind. | Waterloo |
| *Trim Gard | London |
| Dashwood Ind. | Centralia |
| United Plastic Ext. | Centralia |
| GSW | Barrie |

### Metropolitan Toronto

Shaw Flexible Tubes
Tillotson Plastics
*Toronto Plastics
*Grandview Ind.
Lido Ind. Prod. Ltd.
*Pillar Plastics Ltd.
*Mimico Extruders
*Rim Trim Ltd.
*Creators Can. Ltd.

### Contiguous Regions

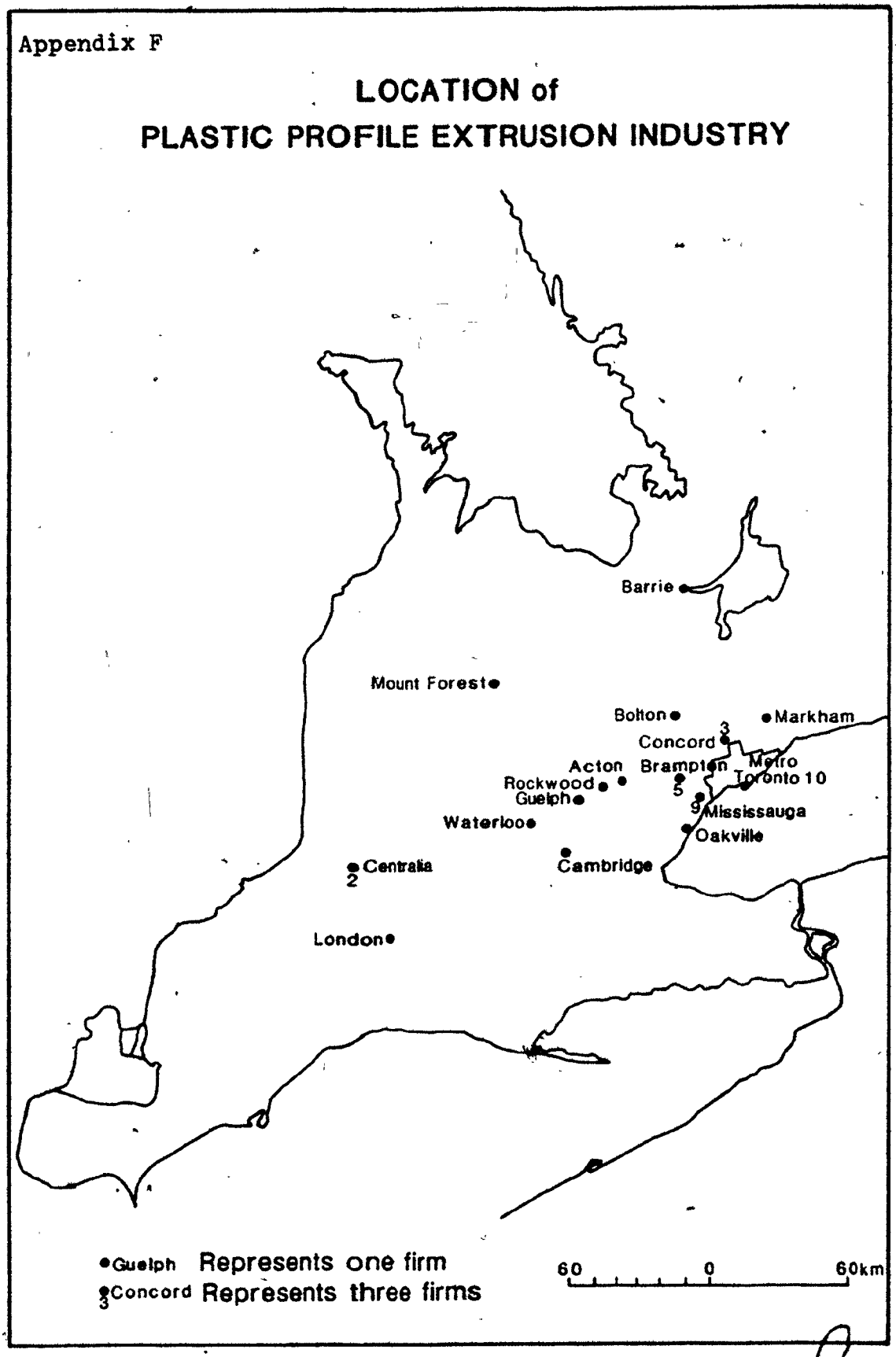
Brampton
*Bramtech Extrusions
Finercraft Plastics
*Homeshield Ind. Ltd.
*Plastmo Ltd.
*R & M Plastics Ltd.

Mississauga
*PV Trim Ltd.
*Trim Fab Ltd.
*Benlan Inc.
Daymond Ltd.
*Polyform Ltd.
*Rexdale Plastics Ltd.
*Kyoda Plastics
*Prasada Plastics
Performance Plastic Ltd.

Concord
*Ninety-Eight Plastic Trim
*Duroflex Plastics Ltd.
Yorkview Plastics Ltd.

* Respondents to the questionnaire.

Appendix F


LOCATION of
PLASTIC PROFILE EXTRUSION INDUSTRY
Barrie
Mount Forest
Bolton
Markham
Concord
3
Acton
Brampton
Metro
Toronto 10
Rockwood
Guelph
5
9
Mississauga
Waterloo
Oakville
Centralia
2
Cambridge
London
Guelph Represents one firm
Concord Represents three firms
3
60
0
60km

## APPENDIX G

## SURVEY OF THE CUSTOM PROFILE EXTRUSION INDUSTRY

1. How long has this company has been located:

   a) at this address _____ no. years
   b) any other _____ no. years
   c) address of (b)

2. Average annual number of employees for the years.

| | 1950 | 1960 | 1970 | 1980 |
|---|---|---|---|---|
| No. | | | | |

3. Your estimate of the total PVC profile extrusion market for the following years, in millions of dollars

| | 1950 | 1960 | 1970 | 1980 |
|---|---|---|---|---|
| $ Domestic | | | | |
| $ Exported | | | | |

4. Your company's annual sales for the following years in thousands of dollars

| | 1950 | 1960 | 1970 | 1980 |
|---|---|---|---|---|
| $ Domestic | | | | |
| $ Exported | | | | |

5. What percent of your domestic sales occur within:

   a) Metro Toronto
   b) Eastern Ontario
   c) Western Ontario
   d) Northern Ontario
   e) Quebec
   f) Atlantic Provinces
   g) Western Provinces

6. Of the extruders that you currently have, how many were purchased:

   a) within 10 miles of your location
   b) within 20 miles of your location
   c) greater than 50 miles
   d) imported from USA/overseas

7. Of the total active dies within your plant, how many were:

   a) made in the plant
   b) made within Metro Toronto
   c) made outside of Metro Toronto (Rest of Canada)
   d) Made outside of Canada

8. Looking to the future of the profile industry, how do you see the outlook for growth. Circle what you feel is the most appropriate answer.

   Rates are average annual percent, based on total industry dollar sales, unadjusted for inflation.

   Through the 1980's to 1989.
   a) 0-2 b) 3-5 c) 6-8 d) 9-12 e) 12-15 f) over 15

   Through the 1990's to 1999
   a) 0-2 b) 3-5 c) 6-8 d) 9-12 e) 12-15 f) over 15

   Through the 2000's to 2009
   a) 0-2 b) 3-5 c) 6-8 d) 9-12 e) 12-15 f) over 15

9. Of the products you manufacture what percent has replaced traditional materials e.g. wood, glass, aluminum, or iron.

   a) less than 25%
   b) less than 50%
   c) less than 75%
   d) greater than 75%

10. In your experience what impact have government grants/loans had on the overall profile industry; circle one.

a) none whatsoever
b) some impact
c) a lot of impact

11. Your plant is obviously located where it is for some particular reason (s). From the following list select the five most important categories and rank from one to five in order of importance as they apply to your company.

( ) availability of labour
( ) convenience to market
( ) availability of building or other property
( ) lower labour costs
( ) availability of raw materials
( ) less unionization
( ) local co-operativeness
( ) home of management
( ) climate
( ) transportation costs
( ) adequate power
( ) centre of particular industry
( ) transportation facilities
( ) decentralization of operation
( ) favourable tax structure
( ) financial aid
( ) other (specify) _____

12. Are current government programs, (federal/provincial) adequate in providing grants/loans for research/development equipment etc., circle one.

a) no help available
b) help available but inadequate
c) adequate help available
d) unfamilar with government programs

13. What advantages do you perceive as receiving because you are located reasonably close to your competitors; circle as many as are applicable.

a) none
b) exchange of ideas, technology, etc.

c) makes suppliers move closer to us
d) keep up to date more readily with changes in market demands
e) competitiveness as an incentive for sales
f) would rather we were located elsewhere (i.e. not in Metro Toronto)
g) other (specify) _____

14. What percent of this company is controlled by:

a) Canadian interests _____
b) American interests _____
c) European interests _____
d) other interests _____

15. What would be the average distance of all your employees from your plant to their homes; circle one

a) less than one mile
b) less than three miles
c) less than five miles
d) between five and ten miles
e) more than ten miles

16. From your warehouse, what percent of final products are transported by:

a) your own carriers (owned/leased)
b) common truck carrier
c) rail

17. If you had to consider moving your plant from Metro Toronto, which of the following areas would you select; and what specific place.

a) Maritime provinces
b) Province of Quebec
c) Eastern Ontario
d) Western Ontario
e) Northern Ontario
f) any province west of Ontario: specify which one _____

18. What has been the impact upon your company of rising energy prices. Select one from (a) or (b).

i. (a) more competitive with primary products, i.e. wood, etc.
(b) less competitive with primary products.

ii. (a) increase of sales
(b) decrease of sales

iii. (a) more cost-control conscious
(b) grin and bear

iv. (a) increase prices to customers to compensate
(b) accept lower margins

v. (a) look for alternative sources
(b) basically maintaining the status quo

19. What research and development (R&D) is done within your own plant versus external sources. Circle the appropriate answer.

(a) 80 - 100%
(b) 60 - 80%
(c) 40 - 60%
(d) 20 - 40%
(e) 0 - 20%

20. Would you see future growth of your industry as occurring:

a) through established plants expanding in situ.
b) through established companies expanding into new locations, within Metro Toronto.
c) through established companies expanding into new locations, outside Metro Toronto.
d) new companies starting up within Metro Toronto
e) outside Metro Toronto

21. Also, in terms of future industry growth (i.e. plant locations), would you perceive Metro Toronto as being the prime place and to what degree

| YES | NO: if your answer is no, then specify what other place would outrank Metro Toronto. |
|---|---|
| a) 100% | |
| b) 90% | |
| c) 80% | |
| d) 70% | |
| e) 60% | |
| f) 50% | |
| g) below 50% | |

22. Any comments you wish to make pertaining to growth and location aspects of your industry?

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